CCD-SC5
RMT-705

SERVICE MANUAL

US Model
Canadian Model
E Model

Video8
Handycam

TK MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅵ" (9-973-446-11).

SPECIFICATIONS

Video Camera Recorder

System

Video recording system
Four rotary heads, Helical scanning FM system

Audio recording system
Rotary head, FM system

Video signal
NTSC color, EIA standards

Usable cassette
8 mm video format cassette (standard 8 mm)

Tape speed
SP mode : Approx. 19/32 inches (1.43 cm)/s
LP mode : Approx. 5/16 inches (0.72 cm)/s (playback only)

Recording time
SP mode : 2h (P6-120)

Playback time
SP mode : 2h (P6-120)
LP mode : 4h (P6-120)

Fast forward/rewind time
Approx. 8 min (P6-120)

Image device
CCD (Charge Coupled Device)

Viewfinder
Optical viewfinder

Lens
Dual lens system
f = 3/16 to 1/2 inches (4 to 12 mm)
1 1/2 to 4 5/8 inches (38 to 115 mm) when converted into a 35-mm still camera

Color temperature
Auto

Minimum illumination
5 lx (F 2.0)

Illumination range
5 lx to 100,000 lx

Recommended illumination
More than 100 lx

LCD screen

Picture
3 inches measured diagonally
2 1/2 × 1 1/4 inches
(61.5 × 44.0 mm)

On-screen display
TN LCD/TFT active matrix method
Total dot number: 75,816 (324 × 234)

Input and output connectors

Video output
Stereomini-jack, 1 Vp-p, 75 Ω, unbalanced, sync negative

Audio output
Stereomini-jack –7.5 dBs, (at load impedance 47 kΩ) impedance less than 2.2 kΩ

MIC DC OUT
Special minijack, DC 5V

MIC jack
minijack, –66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kΩ (ø 3.5 mm)

Speaker
8Ω

Bottom terminal
20 pin special connector

General

Power requirement
On battery mounting surface
7.2 V (battery pack)
6.5 V (AC power adaptor)

Average power consumption
7.2 W (camera recording) including the LCD screen

Installation
Vertically, Horizontally

Operating temperature
32°F to 104°F (0°C to 40°C)

Storage temperature
–4°F to 140°F (–20°C to 60°C)

Dimensions
Approx. 4 1/4 × 5 5/8 × 3 3/8 inches (w/h/d)
(105 × 141 × 84 mm)

Mass
About 1 lb 6 oz (640 g) excluding the battery pack, cassette, and wrist strap
About 1 lb 11 oz (790 g) including the battery pack NP-500, cassette P6-120, and wrist strap

Microphone
Electric condenser microphone, monaural type

— Continued on next page —

8 VIDEO CAMERA RECORDER
SONY®

MICROFILM

AC power adaptor

Power requirements
100-240 V AC*, 50/60 Hz
Power consumption
18 W
Output voltage
DC OUT : 6.5 V, 1.5 A in operating mode
Battery charge terminal: 8.4 V, 1.1 A in charging mode
Application
Sony battery packs NP-500 lithium ion type
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
–4°F to 104°F (–20°C to 60°C)
Dimensions
Approx. 2 ¾ × 1 ¾ × 4 ¼ inches (w/h/d)
(68 × 44 × 107 mm)
including projecting parts and controls
Weight
Approx. 9 oz (260 g)

* Canadian Standard Association (CSA) certifies 120 V AC only.

Design and specification are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

Section Title Page

SERVICE NOTE

Semiconductor for Correction List Display 6
Parts Location Diagram Related to Power Supply 6
Semiconductor Location 6
Head Cleaning 6

1. GENERAL

Checking Supplied Accessories 7
Setting the Date and Time 8
Charging the Battery Pack 9
Inserting the Battery Pack and a Cassette 10
Camera Recording 11
Playing Back a Tape 12
Useful Information on Recording 13
Watching on a TV Screen 14
Other Functions 15
Using the Remote Commander 16
Using House Current as a Power Source 17
Charging Two Battery Packs Consecutively 17
Tips for Using the Supplied Battery Pack 18
Maintenance Information 18
Using Your Camcorder Abroad 19
Precautions 19
Indicators on the LCD Screen 21

2. DISASSEMBLY

2-1. Removal of Upper Cabinet Assembly 22
2-2. Removal of Bottom Cabinet Assembly 22
2-3. Removal of Panel Block Assembly 23
2-4. Removal of PD-42 Board 23
2-5. Removal of Rear Cabinet Assembly 24
2-6. Removal of Cassette LID 24
2-7. Removal of VTR Block 25
2-8. Removal of Lens Assembly (VCL-123VA) 25
2-9. Removal of Iris Unit 26
2-10. Removal of JK-109 Board, Microphone and FK-60 Board (Control Switch Block (FK)) 26
2-11. Removal of BT Holder Assembly 27
2-12. Removal of VC-134 Board 27
2-13. Internal Views 28

3. DIAGRAMS

3-1. Circuit Boards Location 29
3-2. Overall Block Diagram 30
3-3. Camera Block Diagram 33
3-4. Video (1) Block Diagram 37
3-5. Video (2) Block Diagram 41
3-6. Servo Block Diagram 45
3-7. System Control Block Diagram 48
3-8. Audio Block Diagram 51
3-9. LCD Block Diagram 54
3-10. Power Block Diagram 57

Section Title Page

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. Frame Schematic Diagram 61
4-2. Printed Wiring Boards and Schematic Diagrams 64
- FP-36, TL-41 Boards 65
- VC-134 (Camera, Video, Servo/System Control, Audio) Board 68
- VC-134 (Camera) Board 75
- VC-134 (Video) Board 79
- VC-134 (Servo/System Control) Board 84
- VC-134 (Audio) Board 89
- JK-109, SW-230, MA-172, FP-689, FK-60, CF-36 Boards 93
- SD-10, PD-42 Boards 101
- DD-57, EZ-6 Boards 109

4-3. Semiconductors 116

5. EXPLODED VIEWS

5-1. Cabinet (Upper/Bottom) and Panel Assemblies 117
5-2. Main Cabinet Assembly 118
5-3. Board and Lens Assemblies 119
5-4. Cassette Compartment Block Assembly 120
5-5. LS Chassis Block Assembly 121
5-6. Mechanism Chassis Assembly (1) 122
5-7. Mechanism Chassis Assembly (2) 123

6. ELECTRICAL PARTS LIST 124

7. INTERFACES • IC PIN FUNCTIONS

7-1. Camera Micro Processor (VC-134 Board IC653: SC406814FUMC68HC11M2) Pin Functions 145
7-2. OPD (VC-134 Board IC656: CXD2133AR) Pin Functions 146
7-3. Camera Core (VC-134 Board IC660: CXD2101BR) Pin Functions 147
7-4. Camera Core (VC-134 Board IC659: CXD2130R) Pin Functions 148
7-5. Mechanism Control Micro Processor (VC-134 Board IC203: CXP80624A-023R) Pin Functions 150
7-6. Mode Control Micro Processor (VC-134 Board IC903: MB89092PFV-G-137A-BND) Pin Functions 151
7-7. Interface 153
  7-7-1. System Control-Video and Audio Block Interface (VC-134 Board) 153
  7-7-2. System Control-Servo Block Interface (VC-134 Board) 155

Section Title Page

8. CAMERA SECTION ADJUSTMENTS

8-1. Preparations Before Adjustment (Camera Section) ······ 157
8-1-1. List of Service Tools ······ 157
8-1-2. Preparations ······ 159
8-1-3. Precautions ······ 161
1. Switch settings ······ 161
2. Adjusting Procedure ······ 161
3. Subject ······ 161
8-1-4. Adjusting Remote Commander ······ 162
1. Using the adjusting remote commander ······ 162
2. Precautions upon using the adjusting remote commander ······ 162
8-1-5. Page F Address List ······ 163
8-1-6. Page 6 Address List ······ 167
1. Page 6 ······ 167
8-1-7. Adjustment Connector ······ 167
8-1-8. Data Processing ······ 168
8-2. Camera System Adjustment ······ 169
1. Power Supply Voltage Check (DD-57 board) ······ 169
2. Page F Data Initialization ······ 169
3. Page F Data Modification ······ 169
4. CCD Imager Correction Data Write ······ 170
5. 28 MHz Original Oscillation Adjustment (VC-134 board) ······ 170
6. V SUB Adjustment (VC-134 board) ······ 170
7. HALL Adjustment ······ 171
8. Flange Back Adjustment ······ 172
9. SYNC Level Check (VC-134 board) ······ 174
10. BURST Level Check (VC-134 board) ······ 174
11. Picture Frame Setting ······ 175
12. IRIS IN/OUT Adjustment (VC-134 board) ······ 176
13. MAX GAIN Adjustment (VC-134 board) ······ 176
14. Color Reproduction Adjustment ······ 177
15. Auto White Balance Standard Date Input ······ 178
16. Auto White Balance Adjustment ······ 178
17. White Balance Check ······ 179
18. VIDEO OUT Level Check ······ 180
8-3. Arrangement Diagram for Adjustment Parts ······ 182

9. MECHANICAL SECTION ADJUSTMENTS

9-1. Operating without a Cassette ······ 187
9-2. Tape Path Adjustment ······ 188

Section Title Page

10. VIDEO SECTION ADJUSTMENTS

10-1. Preparations Before Adjustment ······ 189
10-1-1. Equipments to be Used ······ 189
10-1-2. Connecting the Equipments ······ 190
10-1-3. Precautions for Adjustments ······ 190
10-1-4. How to Set the REC Mode ······ 191
10-1-5. Connectors for Adjustments (VC-134 board CN001) ······ 191
10-1-6. Set-up during Adjustment ······ 191
10-1-7. Alignment Tape ······ 192
10-1-8. Output Level and Impedance ······ 192
10-1-9. Service Mode ······ 193
1. Setting the Service mode ······ 193
2. Page D Write Protect ······ 196
3. Test Mode Setting ······ 196
4. Emergency Memory Address ······ 196
4-1. EMG Code (Emergency Code) ······ 196
4-2. MSW Codes ······ 197
5. Bit Value Discrimination ······ 198
6. Mode Controller Input Check ······ 198
7. LED Check ······ 199
8. Key Input Check ······ 199
9. Key Input Check (A/D Port) ······ 200
10. Wireless Remote Commander Reception Contents Check ······ 200
11. Battery Voltage Check ······ 201
12. Mechanism Section Switch, etc. Check ······ 201
13. Mechanism Controller Input/Output Check ······ 202
14. Mechanism Controller Input Check ······ 202
15. Mechanism Controller A/D Port Input Voltage Check ······ 203
16. Tape Top/End Sensor Check ······ 203
17. Individual Operations of the Drum, Capstan, and Loading Motor ······ 204
18. Page D Address List ······ 205
10-2. Power System Adjustments ······ 209
1. Oscillator Frequency Check (DD-57 board) ······ 209
2. Power Voltage Check (DD-57 board) ······ 209
10-3. System Control System Adjustments ······ 210
1. Page D Initial Value Input ······ 210
2. Battery End Adjustment ······ 210
10-4. Servo System Adjustments ······ 211
1. Switching Position Adjustment (VC-134 board) ······ 211
2. CAP FG Duty Adjustment (VC-134 board) ······ 211

Section Title Page

10-5. Video Adjustments ··· 212
- 1. Playback Frequency Characteristic Adjustment (VC-134 board) ··· 212
- 2. Flying Erase Check (VC-134 board) ··· 213
- 3. VXO Oscillation Frequency Check (VC-134 board) ··· 213
- 4. SYNC AGC Adjustment (JK-109 board) ··· 213
- 5. IR Adjustment (VC-134 board) ··· 214
- 6. Y/C Separation Adjustment (VC-134 board) ··· 214
- 7. Emphasis Input Level Adjustment (VC-134 board) ··· 215
- 8. PB De-emphasis Adjustment (VC-134 board) ··· 215
- 9. PB LINE OUT Level Adjustment ··· 216
- 10. Y FM Carrier Frequency Adjustment (VC-134 board) ··· 216
- 11. Y FM Deviation Adjustment (VC-134 board) ··· 217
- 12. Chroma Emphasis f_0 Adjustment (VC-134 board) ··· 217
- 13. REC Y Level Adjustment (VC-134 board) ··· 218
- 14. MP REC C RF Preset Adjustment (VC-134 board) ··· 218
- 15. ME REC C RF Preset Adjustment (VC-134 board) ··· 219
- 16. REC ATF Level Check (VC-134 board) ··· 219
- 17. Chroma Flicker Check and REC C RF Adjustment (VC-134 board) ··· 220
- 18. REC AFM Level Check (VC-134 board) ··· 221

10-6. LCD System Adjustment ··· 221
- 1. –8V Adjustment (PD-42 board) ··· 222
- 2. Power Supply Voltage Check (PD-42 board) ··· 222
- 3. EVR Initial Data Input ··· 222
- 4. Bright Adjustment (PD-42 board) ··· 222
- 5. Contrast Adjustment (PD-42 board) ··· 223
- 6. V COM Adjustment ··· 223
- 7. White Balance Preset Adjustment (1) (PD-42 board) ··· 224
- 8. White Balance Preset Adjustment (2) (PD-42 board) ··· 224
- 9. White Balance Adjustment ··· 225
- 10. VCO Adjustment (PD-42 board) ··· 225
- 11. Horizontal Display Position Adjustment (PD-42 board) ··· 225

10-7. Audio System Adjustment ··· 226
- 1. E-E Output Level Check ··· 226
- 2. IR Adjustment ··· 226
- 3. Deviation Adjustment ··· 226
- 4. Carrier Frequency Check (VC-134 board) ··· 227
- 5. Carrier Level Check (VC-134 board) ··· 227
- 6. Overall Level Characteristics, Distortion Check ··· 227

10-8. Arrangement Diagram for Adjustment Parts ··· 228

There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

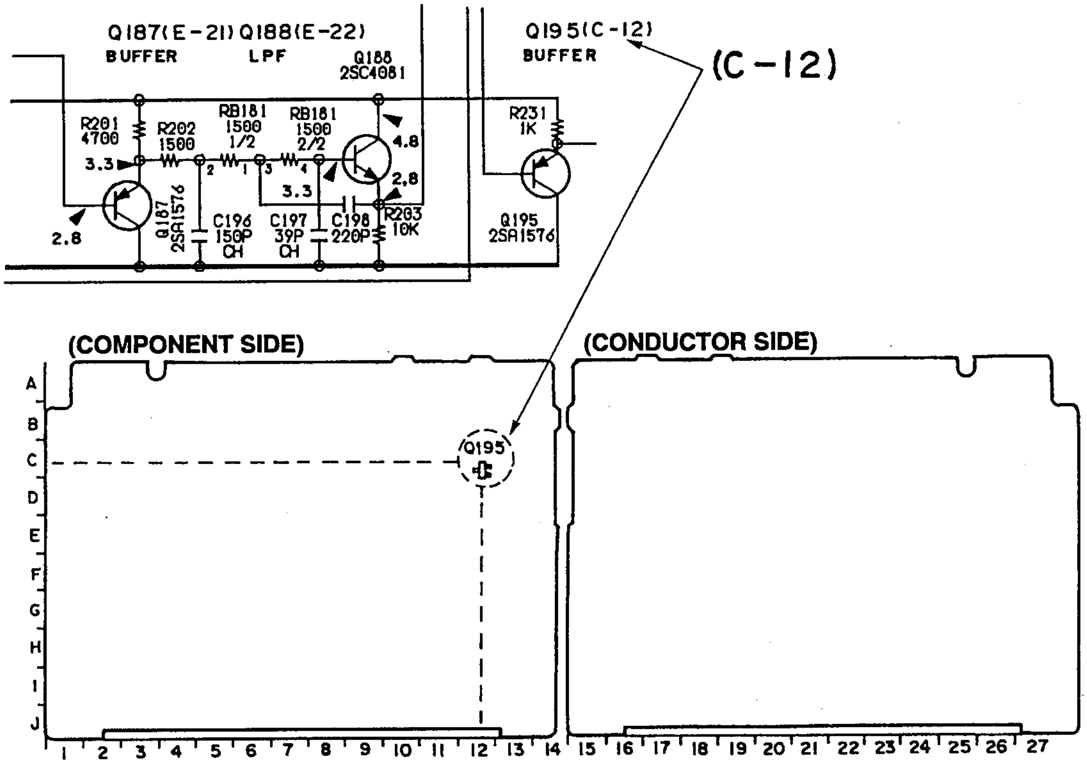
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 111, 112 and 115.)
This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.



Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
R231
1K
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27

[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✲] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

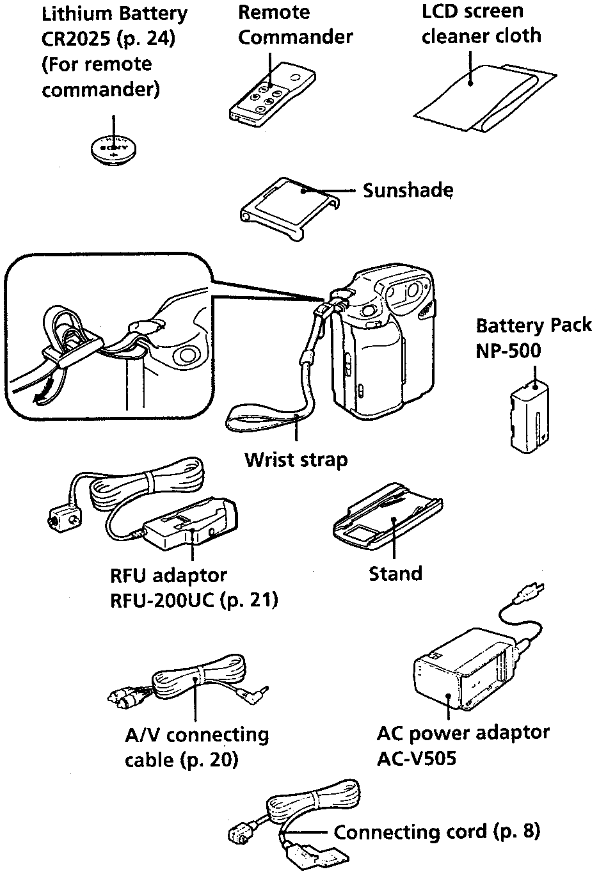
- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

SECTION 1
GENERAL

This section is extracted from instruction manual.

1 Checking Supplied Accessories

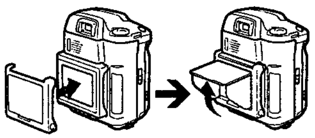
Check that the following accessories are supplied with your camcorder.


Lithium Battery
CR2025 (p. 24)
(For remote
commander)
Remote
Commander
LCD screen
cleaner cloth
Sunshade
Battery Pack
NP-500
Wrist strap
RFU adaptor
RFU-200UC (p. 21)
Stand
A/V connecting
cable (p. 20)
AC power adaptor
AC-V505
Connecting cord (p. 8)

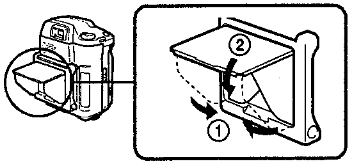
Note on the supplied RFU adaptor
You can use the supplied RFU adaptor only in the country where you bought this camcorder. Since each country has its own electricity and TV color system, you may not be able to use the RFU adaptor when you use the camcorder abroad.

Using the Sunshade

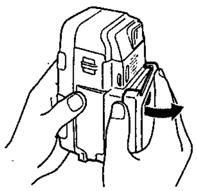
The sunshade prevents dust from sticking to the LCD screen. It also shields out glare form the LCD screen.



To shut the sunshade

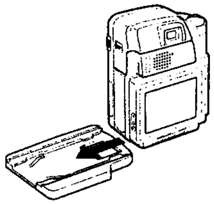


To remove the sunshade



Using the Stand

Use the stand when you record or play back placing the camcorder on a table top or any other flat surface.
When you use the AC power adaptor, connect the adaptor after attaching the stand.
When you use the RFU adaptor, remove the stand.



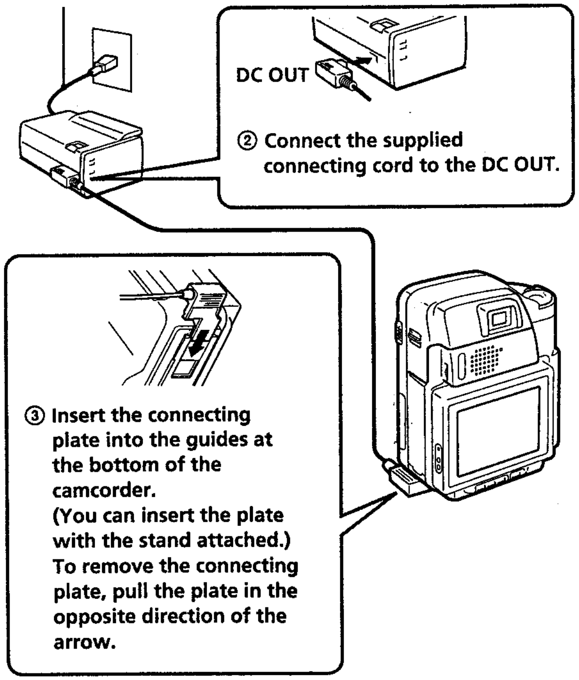
To remove the camcorder, slide in the opposite direction of the arrow.

2 Setting the Date and Time

Before you start using your camcorder, you must set the date and time. This camcorder automatically records the date.

1 Connect a power source to set the date and time.

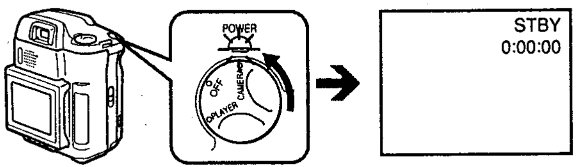
① Connect the supplied AC power adaptor to a wall outlet.



② Connect the supplied connecting cord to the DC OUT.

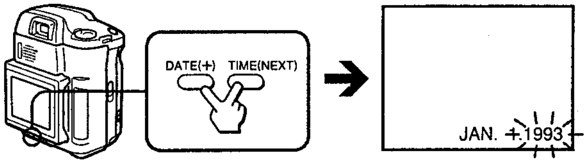
③ Insert the connecting plate into the guides at the bottom of the camcorder.
(You can insert the plate with the stand attached.)
To remove the connecting plate, pull the plate in the opposite direction of the arrow.

2 Set the POWER switch to CAMERA.


POWER
OFF
CAMERA
PLAYER
STBY
0:00:00

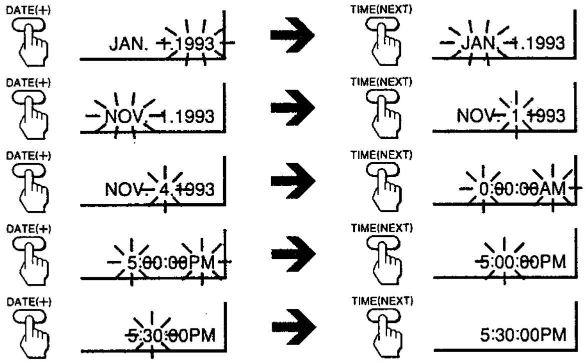
The LCD screen turns on.

3 Press and hold DATE (+) and TIME (NEXT) simultaneously until the year flashes.


DATE(+)
TIME(NEXT)
JAN. 1.1993

4 Adjust the flashing digits for the year, month, day, hour and minutes. Press DATE (+) to increase the number, then press TIME (NEXT) to set the date.

When you finish setting the minutes, the clock starts operating.


DATE(+)
JAN. 1.1993
TIME(NEXT)
JAN. 1.1993
DATE(+)
NOV. 1.1993
TIME(NEXT)
NOV. 1.1993
DATE(+)
NOV. 4.1993
TIME(NEXT)
0:00:00AM
DATE(+)
5:00:00PM
TIME(NEXT)
5:00:00PM
DATE(+)
5:30:00PM
TIME(NEXT)
5:30:00PM

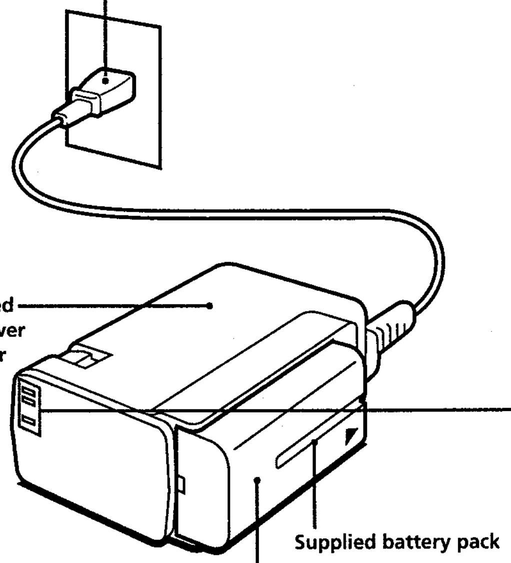
To correct the date and time settings
Press TIME (NEXT) repeatedly until the minute digits stop flashing. Then repeat steps 3 to 4.

To check the preset date and time
Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

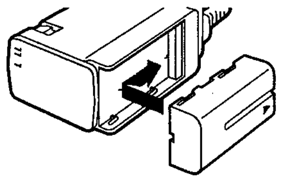
3 Charging the Battery Pack

Before using your camcorder, you first need to charge the supplied battery pack. To charge the battery pack, use the supplied AC power adaptor.

1 Connect the AC power adaptor to a wall outlet.



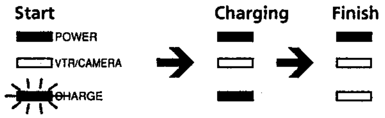
2 Fit and slide the battery pack along the guides.



Align the surface of the battery pack indicated by the ▶ mark with the edge of the terminal shutter of the AC power adaptor.

To quickly use
You can also use the battery pack before it is completely charged. When you charge an empty battery pack about for 10 minutes, you can use it about 7 minutes.

The CHARGE lamp on the AC power adaptor lights during charging. When charging is completed, the CHARGE lamp goes out. Charging time is about 2 hours 30 minutes.*



* Approximate charging time to charge an empty battery pack using the AC-V505 (Lower temperatures require a longer charging time.)

Battery life

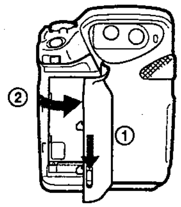
While Recording		While playing back
LCD ON	LCD OFF	45 minutes
40 minutes	75 minutes	

- Approximate continuous recording time indoors.
- To turn off the LCD screen, see page 18.

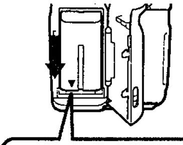
4 Inserting the Battery Pack and a Cassette

Inserting the Battery Pack

1 Open the cover.

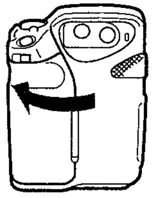


2 Insert the battery pack.



Put the battery pack with the ▼ mark down and slide it in the direction of the arrow.

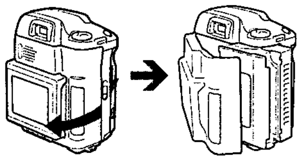
3 Close the cover.



Inserting a Cassette

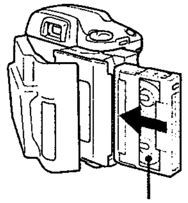
1 Open the cassette compartment cover until it clicks.

To insert and eject a cassette, the camcorder first needs a power source.



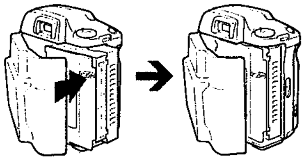
The cassette compartment automatically lifts up and open.

2 Insert a cassette.



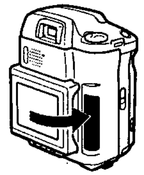
The window faces forward.

3 Press the (PUSH) mark on the cassette compartment to close it.



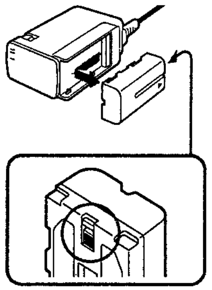
The cassette compartment automatically lifts down.

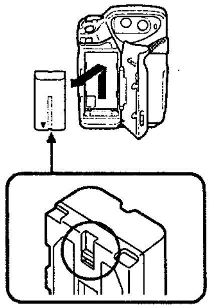
4 Close the cover until it clicks.



The switch on the battery pack

This switch is provided to help you remember the charging status of the battery. When detached from the AC power adaptor, the switch exposes the "green mark". When detached from your camcorder, no mark is indicated.

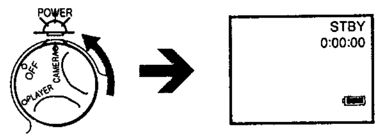




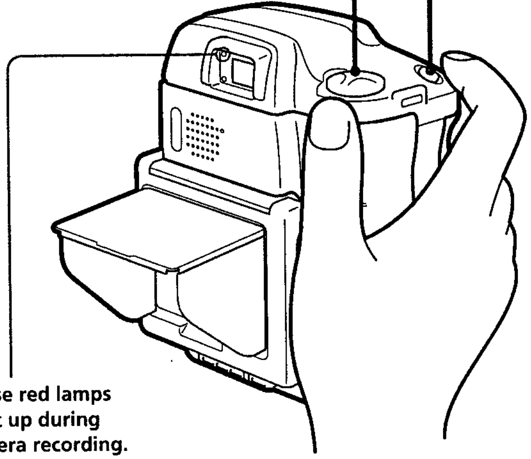
5 Camera Recording

Make sure that a power source is installed and a cassette is inserted. Before you record one-time events, you may want to make a trial recording to make sure that you are using the camcorder correctly.
If you set the date, the date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature).

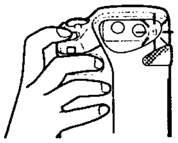
1 Set the POWER switch to CAMERA.



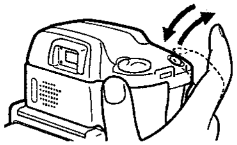
The LCD screen turns on. The camcorder enters Standby mode.



These red lamps light up during camera recording.

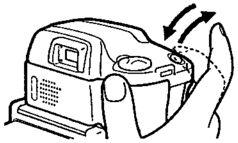


2 Press START/STOP to start recording.



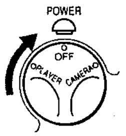
A beep sounds.

3 Press START/STOP again to stop recording.

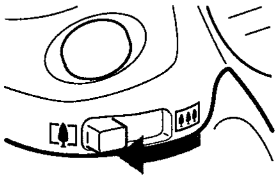


Two beeps sound.

Set the POWER switch to OFF to prevent wearing down the battery when you are not recording.



To record the subject closer
Slide the [👤]/[👥] switch to [👤].

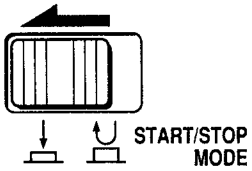


Slide this switch before recording, otherwise the noise is recorded and the transition is not smooth.

Note on the focus range
The picture may be out of focus if you move in too close to the subject.
Take care particularly when recording in a dark place to keep the following distance from your subject:

[👤]: 4 feet 3¼ inches (130 cm) or more
[👥]: 1 feet 1⅞ inches (35 cm) or more

Note on the START/STOP button
You can also make recording while pressing down the START/STOP button.
To make the START/STOP button work this way, slide the START/STOP MODE switch at the bottom of the camcorder to ⊥.

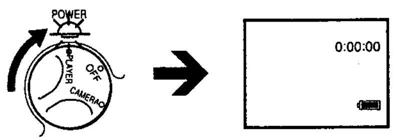


6 Playing Back a Tape

You can watch the playback picture on the LCD screen. You can also watch on a TV screen, by connecting the camcorder to the TV/VCR (p. 20).

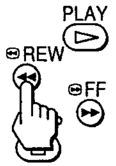
Watching on the LCD screen

1 Set the POWER switch to PLAYER .

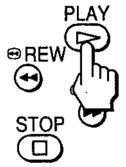

POWER
PLAYER
OFF
CAMERA
0:00:00

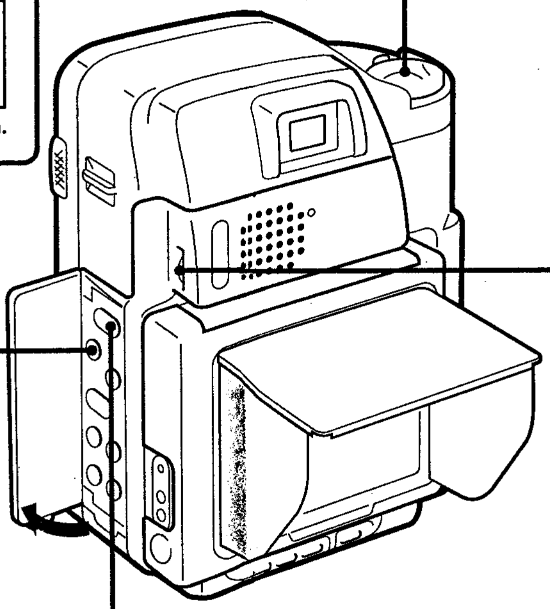
The LCD screen turns on.

2 Press ◀◀ REW to rewind the tape.

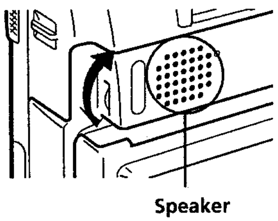


3 Press ▷ PLAY.
Playback starts.


PLAY
REW
STOP

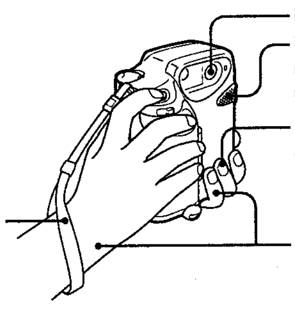


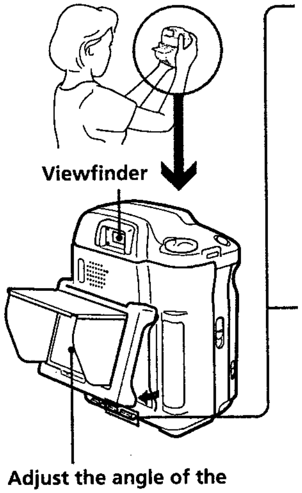
Adjust the volume.



Note on playback
Streaks appear and the sound is muted in the various playback modes.

Useful Information on Recording


Pass your hand through the wrist strap.
Lens
Built-in microphone (monaural)
Keep your fingers away from the lens and the built-in microphone.
Hold the camcorder firmly


Viewfinder
Adjust the angle of the LCD screen.

To Increase the Battery Life

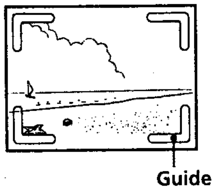
Use the LCD ON/OFF button. The battery lasts longer when the LCD screen is off. Use the viewfinder instead of the LCD screen.

To check the Recorded Picture

Press ⊜. The last few seconds of the recorded portion plays back (Rec Review).

Note on recording area

When using the viewfinder, use the guides as references for shooting.



Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes or more with a cassette inserted, the camcorder goes off automatically.
This prevents wearing down the battery and wearing out the tape. To record again, set the POWER switch to OFF once and then to CAMERA.

Note on the AUTO DATE feature

The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when you:

- reset the date and time.
- eject and insert the tape again.
- stop recording within 10 seconds.

To record from the beginning of the tape

Run the tape for about 15 seconds before actually recording. This prevents the camcorder from missing any start-up scenes when you play back the tape.
You can record tapes in SP (standard play) mode only.

Shoot with the sun behind you

When the light source is behind your subject, or in the following situations, the subject will be recorded too dark.

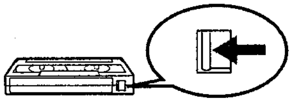
- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

To shoot in the dark

We recommend that you use an optional video light. To get the best color, you must maintain a sufficient light level.

To prevent accidental erasure

Slide the tab on the cassette to expose the red mark.

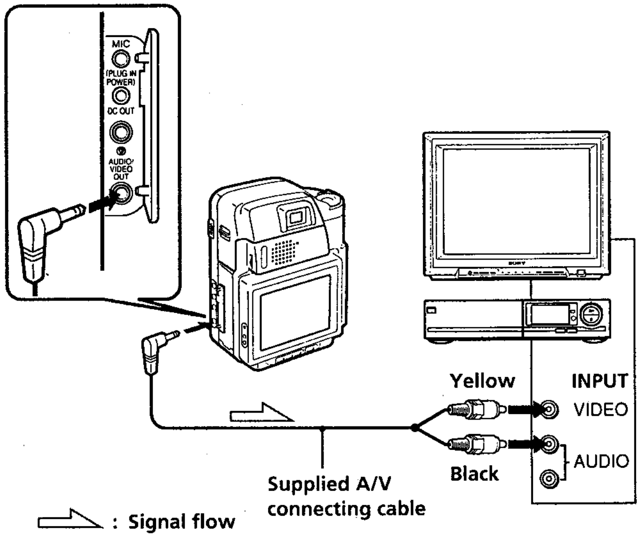


If you try to record with the red mark exposed, the ▭ and ⏏ indicators flash on the LCD screen, and you cannot record. To re-record on this tape, slide the tab back out so it covers the red mark.

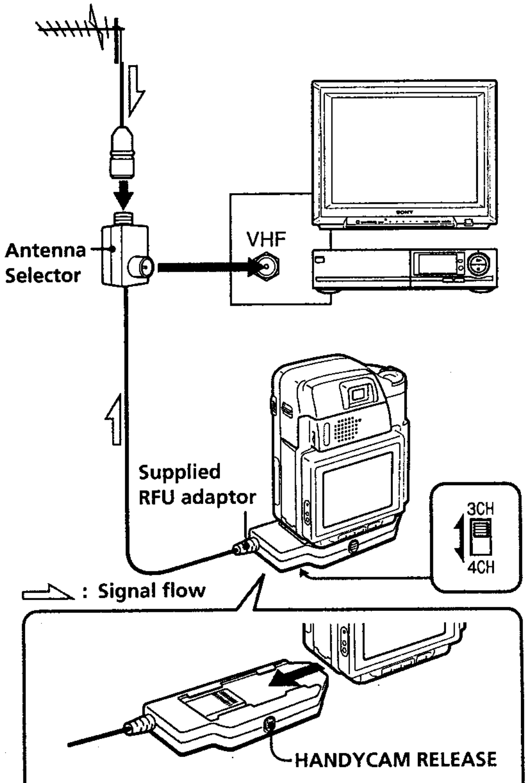
Watching on a TV screen

You can use this camcorder as a VCR by connecting it directly to your TV for playback. This section describes several ways to connect the camcorder to your TV.
While playing back on a TV screen, turn off the speaker volume control of the camcorder.

Connecting to a TV with Video/Audio Jacks or a VCR
Connect the camcorder to your TV using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR. Before connecting a cable, make sure that the TV is turned off to prevent speaker damage.

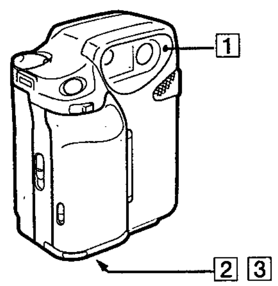

MIC
(PLUG IN POWER)
DC OUT
AUDIO/VIDEO OUT
Yellow
Black
INPUT
VIDEO
AUDIO
Supplied A/V connecting cable
: Signal flow

Connecting to a TV without Video/Audio Input Jacks
Connect the camcorder to the TV using the supplied RFU adaptor. Before hooking up your camcorder, make sure that the TV is turned off to prevent speaker damage .Set the channel selector on the RFU adaptor and your TV channel to VHF channel CH 3 or CH 4, whichever is not active in your area.


Antenna Selector
VHF
Supplied RFU adaptor
3CH
4CH
: Signal flow
HANDYCAM RELEASE

Slide the camcorder along the guides until it clicks.
To remove the camcorder, press down HANDYCAM RELEASE to unlock the camcorder.

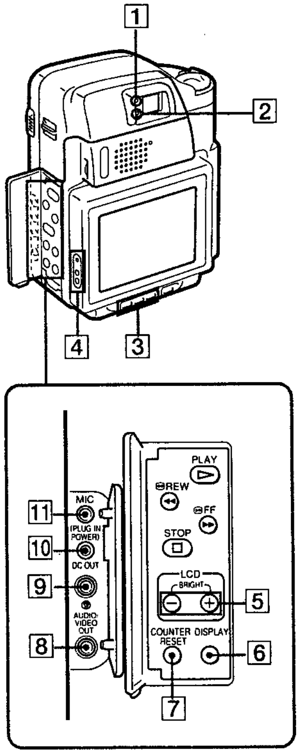
Other Functions



1 Camera recording/ battery lamp
This red lamp lights up during camera recording. When it flashes, the battery is weak or the tape is near the end.

2 BEEP switch
To turn off the beep sound, set this switch to OFF.

3 REMOTE COMMANDER switch
To prevent operating the camcorder accidentally by the Remote Commander, set this switch to OFF .



1 Camera recording/ battery lamp
This red lamp lights up during camera recording. When it flashes, the battery is weak or the tape is near the end.

2 Warning lamp
This orange lamp flashes when a problem occurs. See the warning indicators on the LCD screen. (p.34)

3 DATE (+) and TIME (NEXT) buttons
Press to record with the date or time. Press again to stop recording with the date or time.

4 COLOR and HUE adjustment screw
If you want to change the color of the picture displayed on the LCD screen, turn the screw slowly using an optional screwdriver. You do not need to adjust it for everyday operation.

5 LCD BRIGHT buttons
Press to adjust the brightness on the LCD screen .
+: More brightness
–: Less brightness

6 DISPLAY button
Press to erase the screen indicators on the LCD screen. To display the indicators, press again. The indicators don't appear on the TV.

7 COUNTER RESET button
Press to reset the tape counter to zero.

8 AUDIO/VIDEO OUT jack
This jack works as an output jack. To view the recorded picture on a TV or to record onto another tape, connect this jack and the AUDIO/VIDEO input jacks on the TV or VCR using the supplied A/V connecting cable. .

9 EARPHONE jack ⊚ (monaural)
To monitor the sound while viewing the recording picture, connect an optional earphone.
Adjust the earphone volume using the speaker volume control.

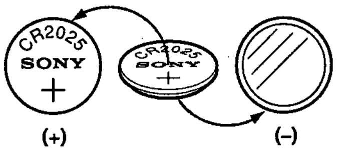
10 MIC DC OUT jack
This jack supplies power to an optional external microphone .

11 MIC (PLUG IN POWER) jack
Connect an optional external microphone (monaural). This jack also accepts a "plug-in-power" microphone. If the microphone has two plugs, connect the DC IN plug to the MIC DC OUT jack on the camcorder.

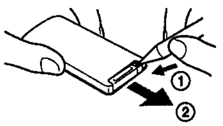
Using the Remote Commander

Inserting the Lithium Battery

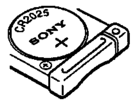
Before you use the Remote Commander, you must insert the lithium battery. Use the supplied CR2025 lithium battery. Note that the lithium battery has a positive (+) and a negative (–) terminal as illustrated.
Be sure to install the lithium battery so that the terminals on the battery match the terminals on the Remote Commander.



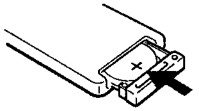
1 **Pull out the lithium battery holder.**



2 **Insert the lithium battery with the positive (+) terminal facing up.**



3 **Push in the lithium battery holder.**

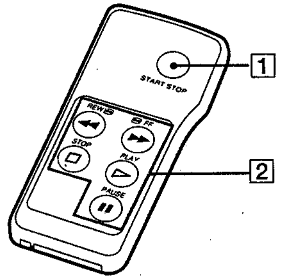


WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of it in fire.

Caution
Keep the lithium battery out of the reach of children. If the battery is accidentally swallowed, consult a doctor immediately.

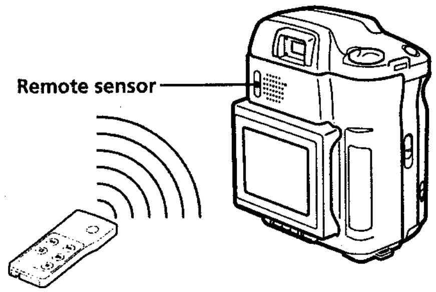
Lithium battery life
The lithium battery for the Remote Commander lasts for about 1 year under normal operation. When the battery becomes weak or dead, the Commander does not work. In this case, **replace the battery with the Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.**

Identifying Parts on the Remote Commander



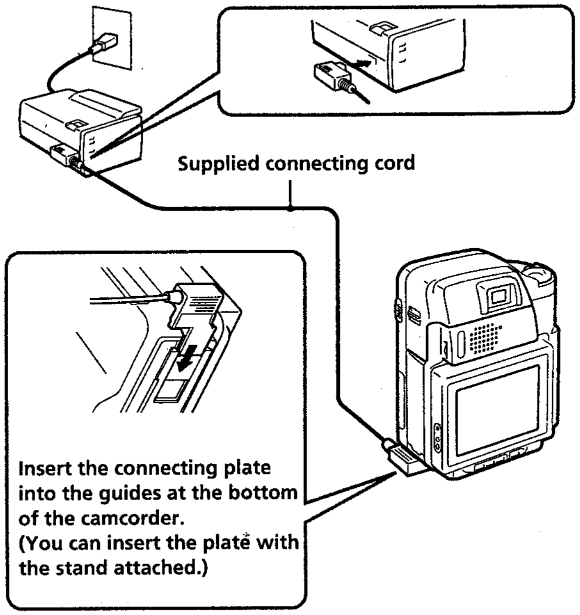
1 **START/STOP button**
2 **Tape transport buttons**
PAUSE is available only on the remote commander. When still picture mode lasts for 5 minutes, the camcorder automatically enters stop mode.

Remote Control Direction



Using House Current as a Power Source

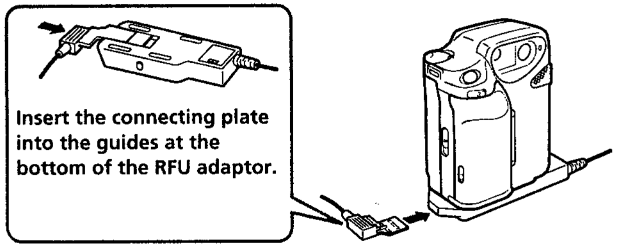
You can use house current as a power source. Use the supplied AC power adaptor and the connecting cord.



Insert the connecting plate into the guides at the bottom of the camcorder.
(You can insert the plate with the stand attached.)

When You Use the RFU Adaptor

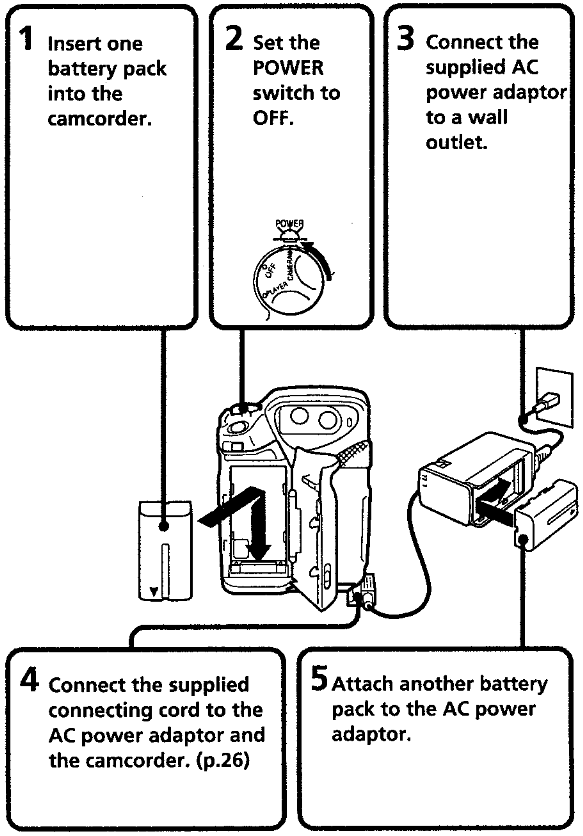
You can connect the AC power adaptor to the RFU adaptor.



Insert the connecting plate into the guides at the bottom of the RFU adaptor.

Caution
To prevent accident from a short circuit, do not come into contact with the terminal inside the shutter at the bottom of the camcorder.

Charging Two Battery Packs Consecutively



1 Insert one battery pack into the camcorder.

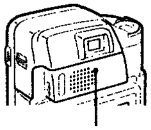
2 Set the POWER switch to OFF.

3 Connect the supplied AC power adaptor to a wall outlet.

4 Connect the supplied connecting cord to the AC power adaptor and the camcorder. (p.26)

5 Attach another battery pack to the AC power adaptor.

The battery pack attached to the AC power adaptor is charged first. Then the battery pack inside the camcorder is charged. When charging is completed, the CHARGE lamp on the AC power adaptor goes out first. Then the charge lamp on the camcorder goes out. Charging time is totally about 6 hours.



Tips for Using the Supplied Battery Pack

Note on Charging

Recharge the battery pack whenever you like.
You do not have to discharge it before recharging. If you charged the battery pack fully but you did not use it for a long time, it becomes discharged. So recharge the battery pack before use.

Preparing the Battery Pack

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.
"Battery life" is measured by continuous camcorder recording time, at a room temperature using a fully-charged battery. The battery is also expended when you:

- insert or eject a tape
- set the POWER switch to CAMERA.
- set the POWER switch to PLAYER.

Battery Life is Shorter in a Cold Climate

Battery efficiency is decreased and the battery wears out more quickly in cold weather (50°F/10°C or less).
For longer battery life, we recommend the following:

- Keep the battery pack warm until you're ready to start using the camcorder.
- Charge the battery using the AC power adaptor at room temperature (from 50°F/10°C to 86°F/30°C).

Caution

Never leave the battery pack under temperatures above 140°F/60°C, such as in a car parked in the sun or under direct sunlight.

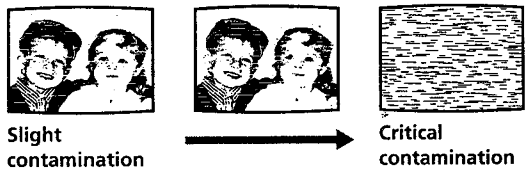
Maintenance Information

Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Clean the LCD screen with the supplied LCD screen cleaner cloth to remove fingerprints.

Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are "noisy" or hardly visible, the video heads may be contaminated.



If this happens, clean the video heads with the optional cleaning cassette Sony V8-25CLH . After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning for more than 5 times.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

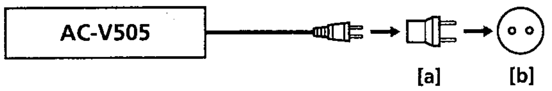
Note
If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

Using Your Camcorder Abroad

Each country has its own electricity and TV color systems. Before using your camcorder abroad, check the following points.

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz. Use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Difference in Color Systems

This camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV. When you want to use a PAL-M system based TV, you will need a NTSC/PAL-M transcoder. Check the following alphabetical list.

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany (former West Germany), Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

SECAM system countries
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.

Precautions

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside and on the surface of the camcorder. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder
When the ▣ and ⏏ indicators flash on the LCD screen, this indicates moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.
Eject the tape, turn off the camcorder, and leave it with the cassette compartment open for at least one hour in a dry place.
If the ▣ indicator does not light up when you turn on the power, you can use the camcorder again.

On the Surface of the Tape
If there is moisture on the surface of the tape, when you insert tape and press a tape transport button, the ⏏ indicator flashes on the LCD screen. If this happens, none the functions except cassette ejection will work.
Eject the tape, turn off the camcorder, and leave it with the cassette compartment open for at least one hour in a dry place.
If the ⏏ indicator does not light up when you insert the tape and press a tape transport button, you can use the camcorder again.

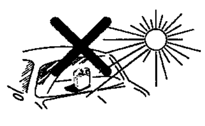
On the Lens
No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to Prevent Moisture Condensation
When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to reach room conditions over a period of time.
(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about one hour).

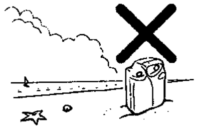
Camcorder Operation

- Operate the camcorder using 7.2 V (battery pack), or 6.5 V (AC power adaptor).
- For DC or AC operation, use only the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by qualified personnel before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camera.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- **Never leave the camcorder under temperatures above 140°F/60°C, such as in a car parked in the sun or under direct sunlight. [a]**
- **Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired. [b]**
- **Do not let the camcorder get wet. Keep the camcorder from rain or sea water. It may cause a malfunction and sometimes the malfunction cannot be repaired. [c]**

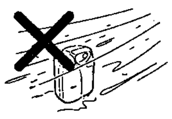
[a]



[b]



[c]



- Do not push the LCD screen.
- If the unit is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- Constant bright points of light (red, blue, or green) may appear on the LCD screen. This is not a malfunction.
- While using the camcorder, the back of the LCD screen may heat up. This is not a malfunction.

AC Power Adaptor

Charging

- Use only the lithium ion type battery with LITHIUM ION mark.
- Charge the battery on a flat place without vibration.
- The battery will get hot during charging. However, this is normal.

Charging Temperature

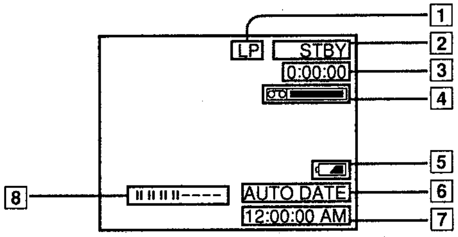
The temperature range for charging is 41°F/5°C to 95°F/35°C. However, to provide maximum battery efficiency, the recommended temperature range when charging is 50°F/10°C to 86°F/30°C.

Others

- The model for USA or Canada: One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall outlet when not in use for a long time . To disconnect the cord (mains lead), pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if it has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If it does, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- While the unit is in use, it will get hot. However, this is normal.
- Do not place the unit in locations where it is;
  - Extremely hot or cold
  - Dust or dirty
  - Very humid
  - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Indicators on the LCD Screen

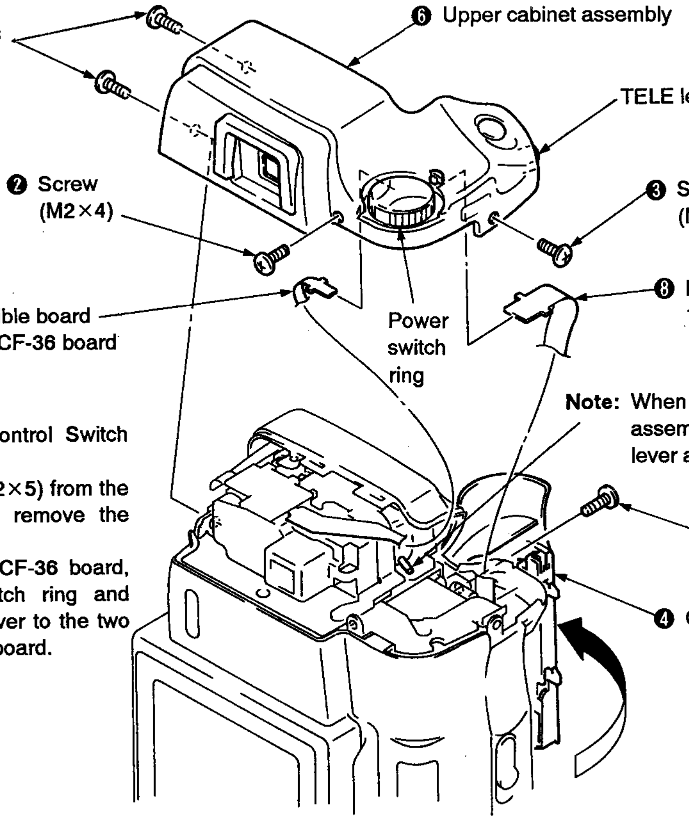


1. Lights up when playing back a tape recorded in LP mode
2. Tape transport mode
3. Tape counter (h/m/s)
   The counter does not move when you play back a blank tape.
4. Tape remaining indicator
5. Battery remaining indicator
6. AUTO DATE indicator
7. Date or Time
8. Brightness level indicator

📼	**Indicates a problem with the tape** •No tape has been inserted. •The tape is near the end. •The tape is end. •The tab on the tape is out (red).
⏏	**Indicates you need to eject the cassette. Or this may flash when some other problem has occurred.**
💧	**Indicates moisture condensation has occurred. Remove the cassette and do not use the camcorder for at least one hour.**
⊗	**Indicates the video heads may be contaminated. Clean the video heads using the optional cleaning cassette Sony V8-25CLH.**

SECTION 2
DISASSEMBLY

2-1. REMOVAL OF UPPER CABINET ASSEMBLY



❶ Two screws
(M2×4)

❻ Upper cabinet assembly

TELE lens switching lever

❷ Screw
(M2×4)

❸ Screw
(M2×4)

❼ FP-35 flexible board
4P on the CF-36 board

Power
switch
ring

❽ FP-31 flexible board
11P on the CF-36 board

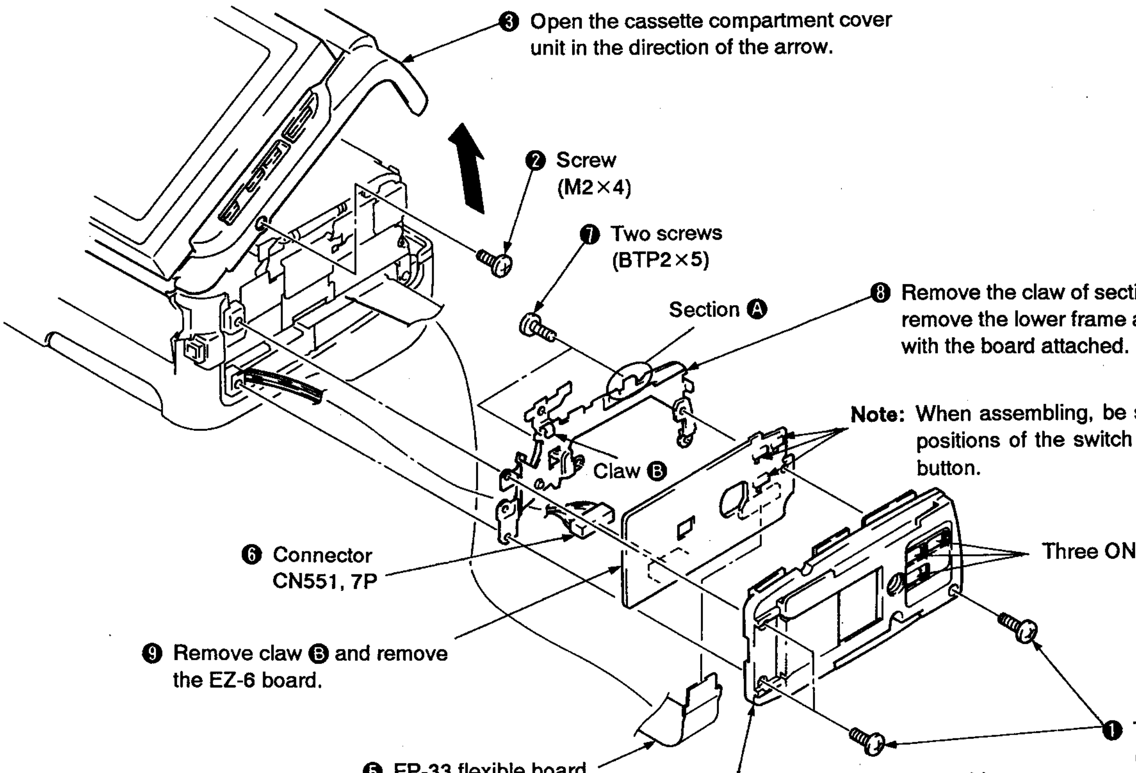
Note: When assembling the upper cabinet assembly, adjust the positions of this lever and the TELE lens switching lever.

※ Removal of CF-36 Board (Control Switch Block (CF))
Remove the four screws (BTP2×5) from the upper cabinet assembly and remove the CF-36 board.
Note: When assembling the CF-36 board, adjust the power switch ring and TELE lens switching lever to the two switches on the CF-36 board.

❺ Screw
(M2×4)

❹ Open the BT lid assembly.

2-2. REMOVAL OF BOTTOM CABINET ASSEMBLY



❸ Open the cassette compartment cover unit in the direction of the arrow.

❷ Screw
(M2×4)

❼ Two screws
(BTP2×5)

Section Ⓐ

❽ Remove the claw of section Ⓐ and remove the lower frame assembly with the board attached.

Note: When assembling, be sure to adjust the positions of the switch and the ON/OFF button.

Three ON/OFF buttons

❻ Connector
CN551, 7P

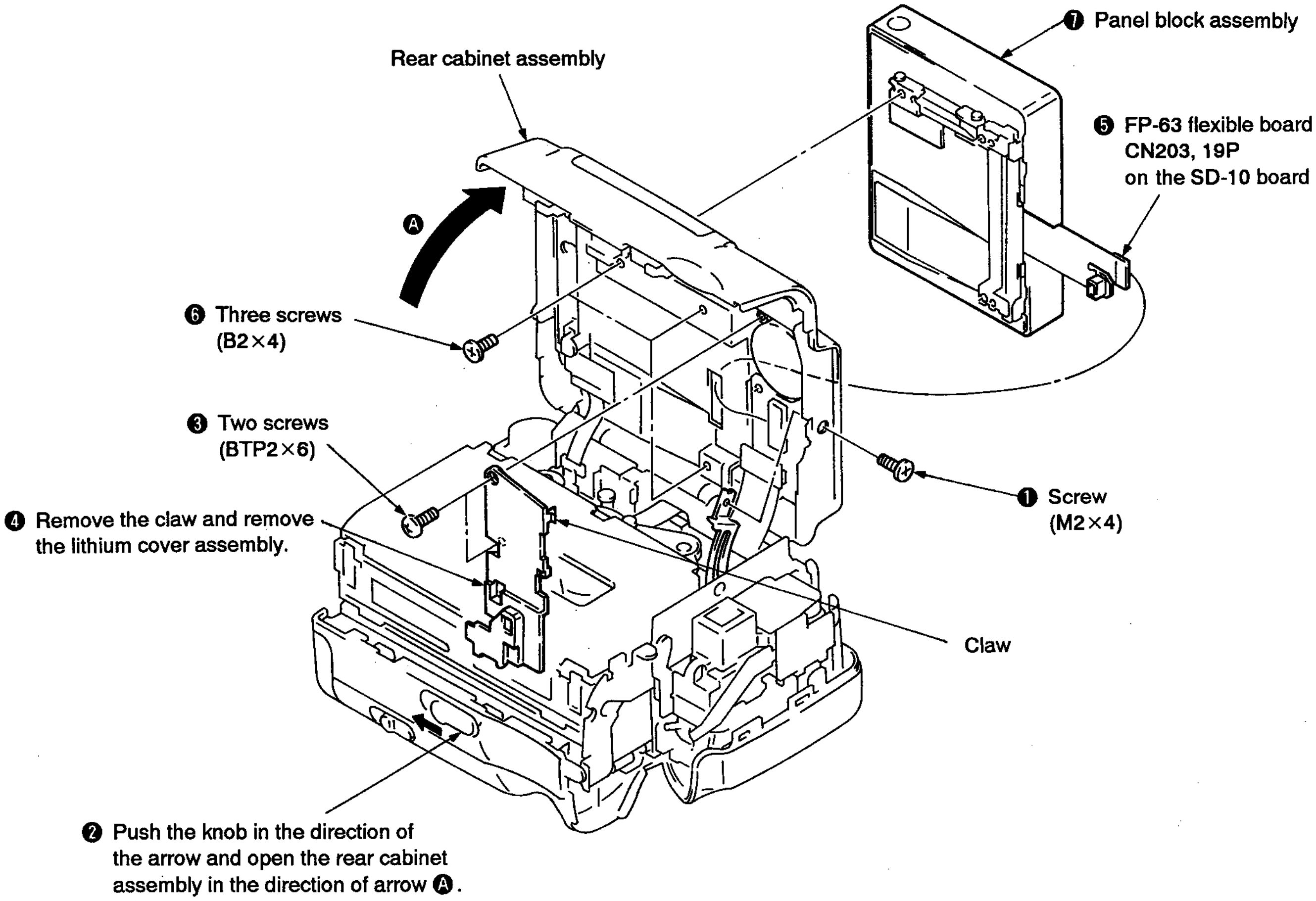
❾ Remove claw Ⓑ and remove the EZ-6 board.

❶ Three screws
(M2×4)

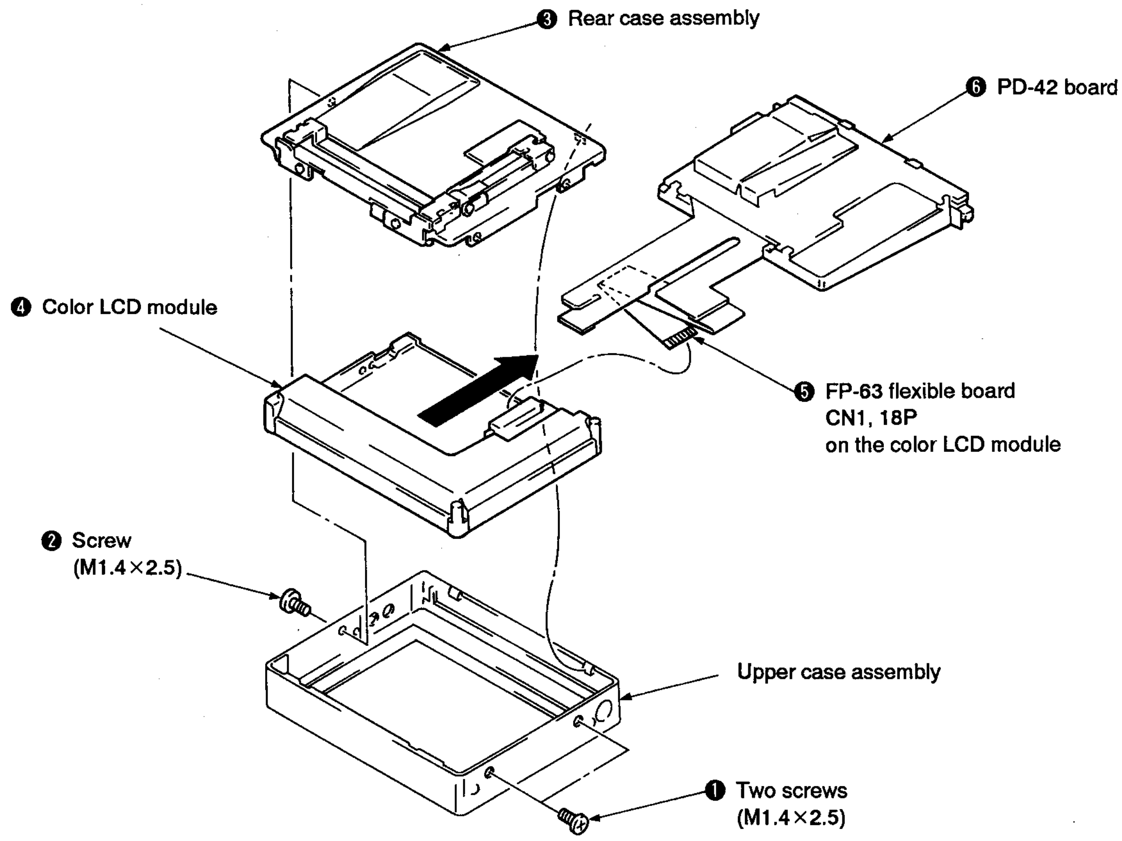
❺ FP-33 flexible board
CN550, 20P

❹ Bottom cabinet assembly

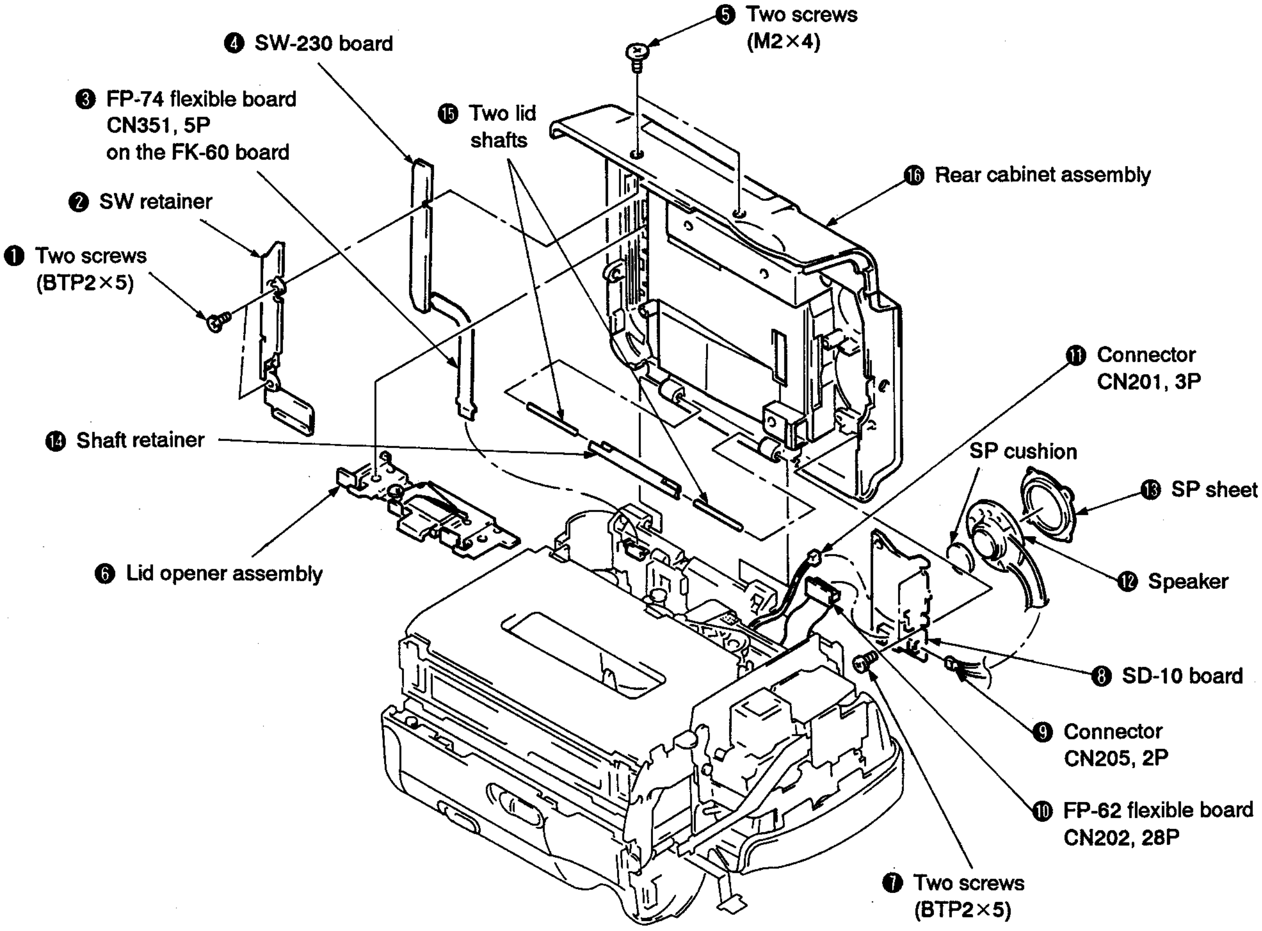
2-3. REMOVAL OF PANEL BLOCK ASSEMBLY


❼ Panel block assembly
Rear cabinet assembly
❺ FP-63 flexible board
CN203, 19P
on the SD-10 board
Ⓐ
❻ Three screws
(B2×4)
❸ Two screws
(BTP2×6)
❹ Remove the claw and remove
the lithium cover assembly.
❶ Screw
(M2×4)
Claw
❷ Push the knob in the direction of
the arrow and open the rear cabinet
assembly in the direction of arrow Ⓐ.

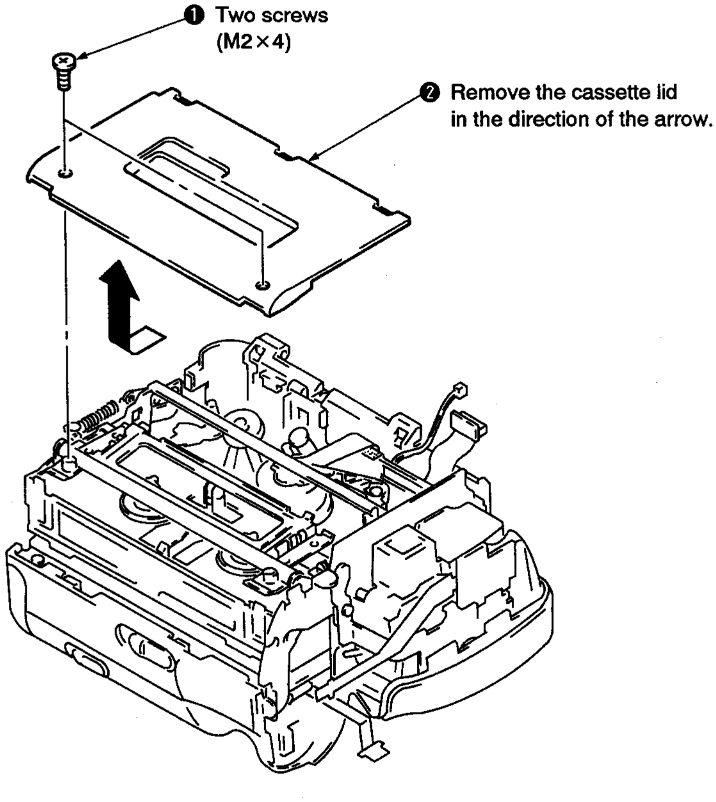
2-4. REMOVAL OF PD-42 BOARD


❸ Rear case assembly
❻ PD-42 board
❹ Color LCD module
❺ FP-63 flexible board
CN1, 18P
on the color LCD module
❷ Screw
(M1.4×2.5)
Upper case assembly
❶ Two screws
(M1.4×2.5)

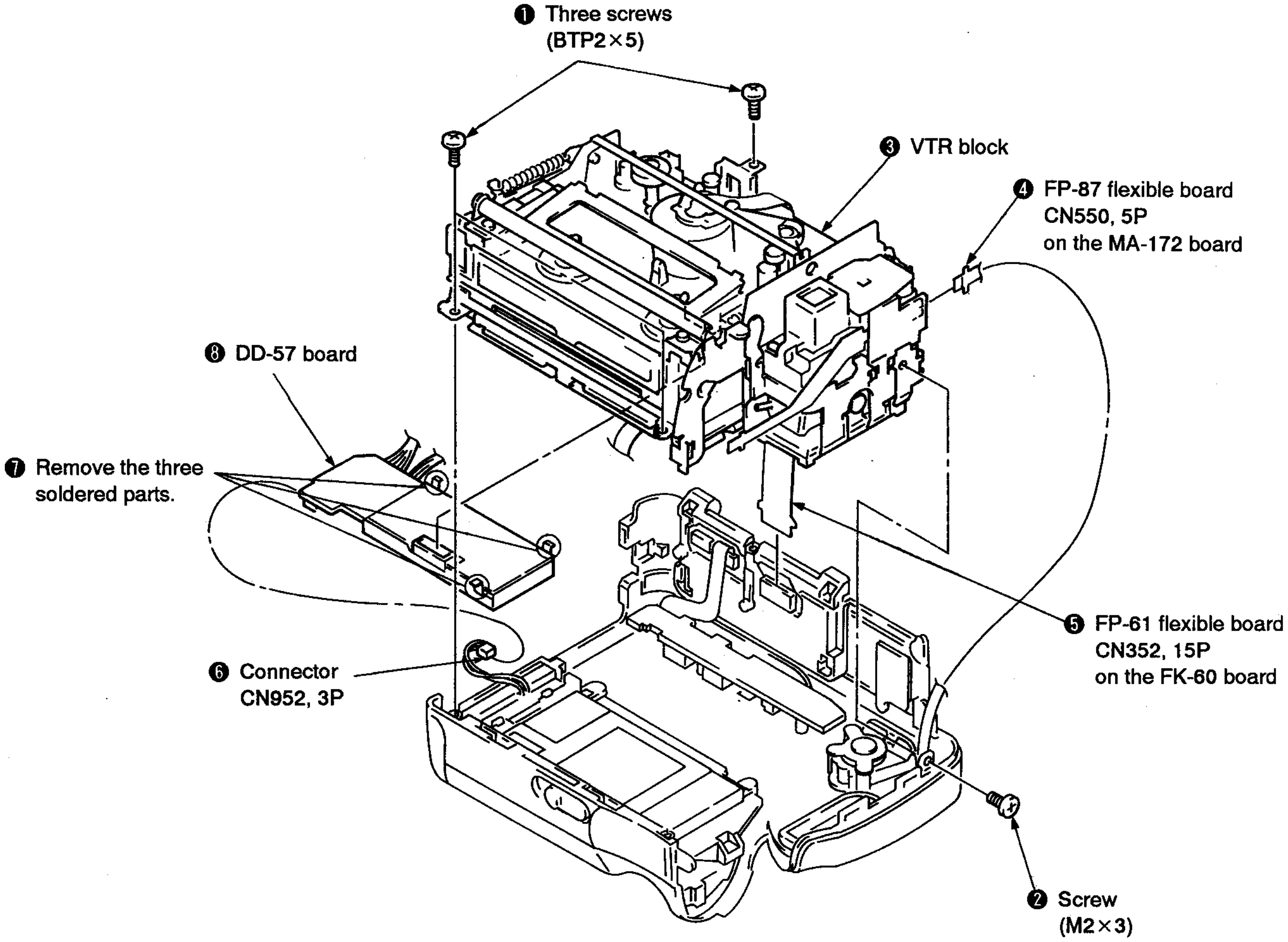
2-5. REMOVAL OF REAR CABINET ASSEMBLY


⑤ Two screws (M2×4)
④ SW-230 board
③ FP-74 flexible board CN351, 5P on the FK-60 board
⑮ Two lid shafts
⑯ Rear cabinet assembly
② SW retainer
① Two screws (BTP2×5)
⑪ Connector CN201, 3P
⑭ Shaft retainer
SP cushion
⑬ SP sheet
⑥ Lid opener assembly
⑫ Speaker
⑧ SD-10 board
⑨ Connector CN205, 2P
⑩ FP-62 flexible board CN202, 28P
⑦ Two screws (BTP2×5)

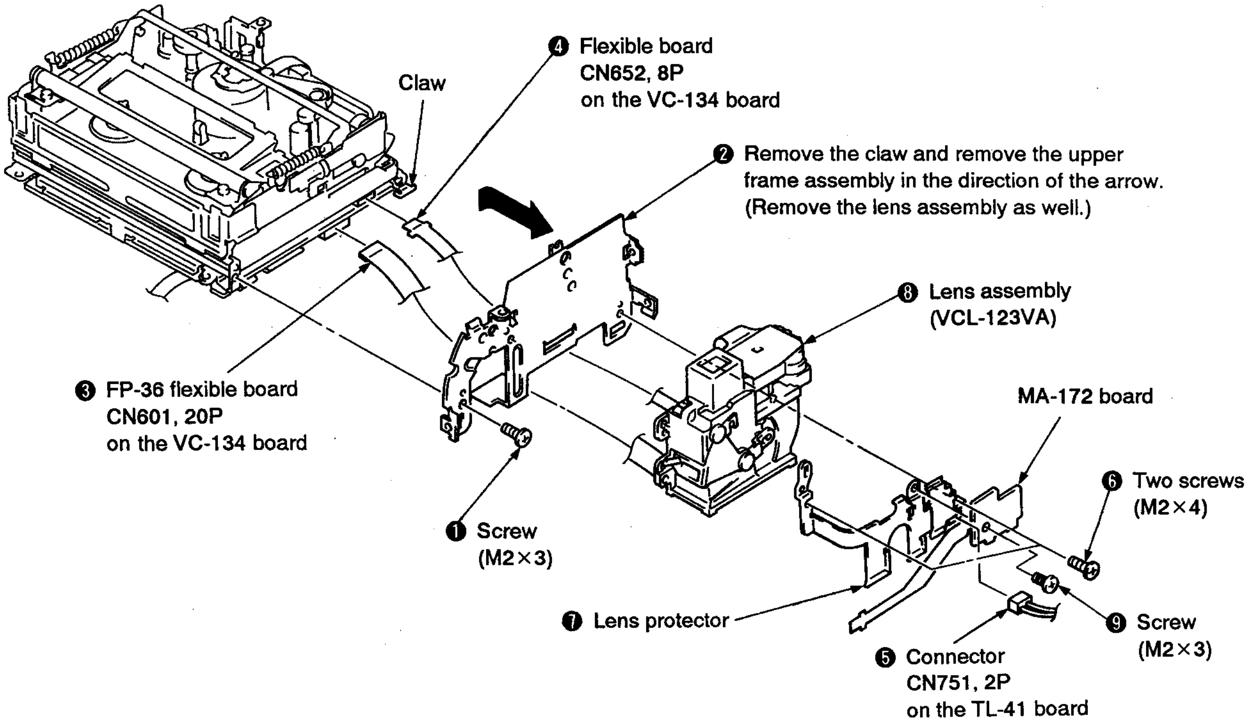
2-6. REMOVAL OF CASSETTE LID


① Two screws (M2×4)
② Remove the cassette lid in the direction of the arrow.

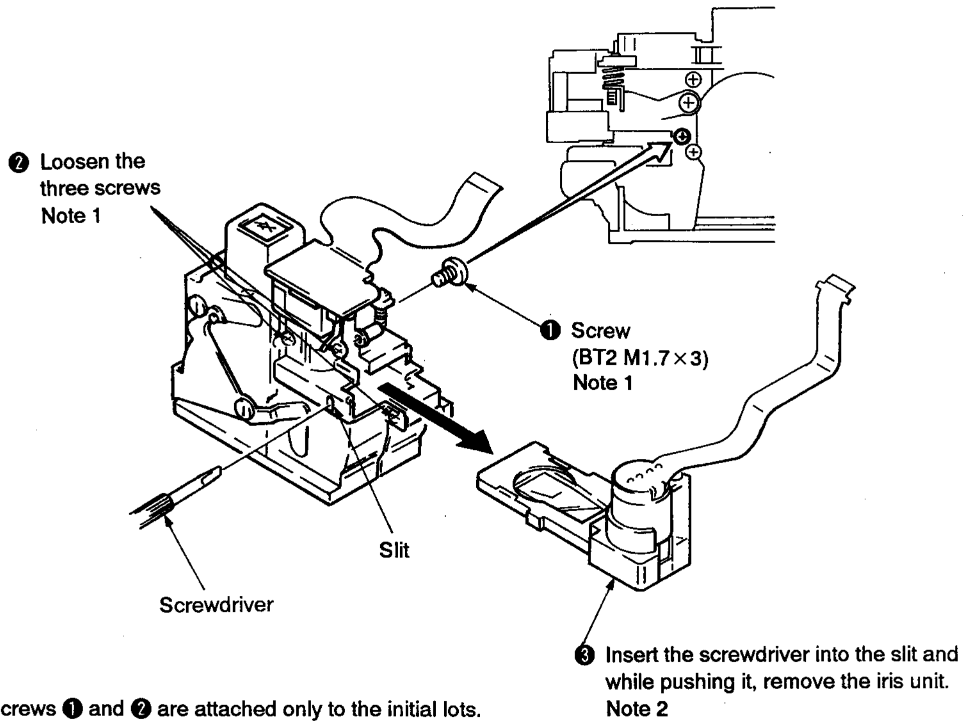
2-7. REMOVAL OF VTR BLOCK


❶ Three screws
(BTP2×5)
❸ VTR block
❹ FP-87 flexible board
CN550, 5P
on the MA-172 board
❽ DD-57 board
❼ Remove the three
soldered parts.
❺ FP-61 flexible board
CN352, 15P
on the FK-60 board
❻ Connector
CN952, 3P
❷ Screw
(M2×3)

2-8. REMOVAL OF LENS ASSEMBLY (VCL-123VA)

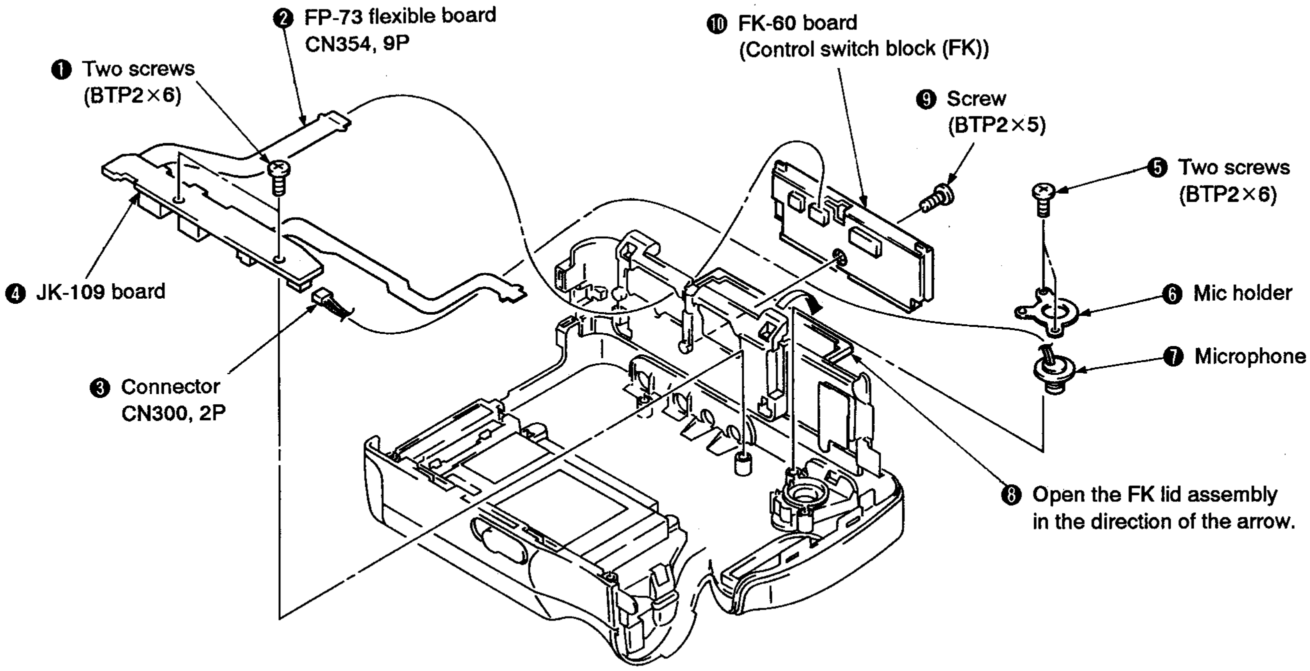

Claw
❹ Flexible board
CN652, 8P
on the VC-134 board
❷ Remove the claw and remove the upper
frame assembly in the direction of the arrow.
(Remove the lens assembly as well.)
❽ Lens assembly
(VCL-123VA)
MA-172 board
❸ FP-36 flexible board
CN601, 20P
on the VC-134 board
❻ Two screws
(M2×4)
❶ Screw
(M2×3)
❼ Lens protector
❾ Screw
(M2×3)
❺ Connector
CN751, 2P
on the TL-41 board

2-9. REMOVAL OF IRIS UNIT

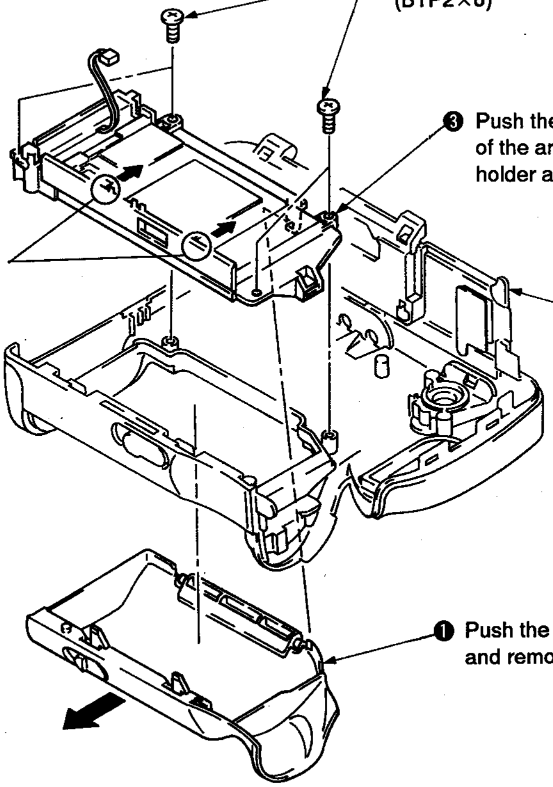

❷ Loosen the three screws Note 1
❶ Screw (BT2 M1.7×3) Note 1
Slit
Screwdriver
❸ Insert the screwdriver into the slit and while pushing it, remove the iris unit. Note 2

Note 1: Screws ❶ and ❷ are attached only to the initial lots.
Note 2: Do not re-use iris units that have been removed once. And do not remove them until the defects of the iris have been clarified.

2-10. REMOVAL OF JK-109 BOARD, MICROPHONE AND FK-60 BOARD (CONTROL SWITCH BLOCK (FK))


❷ FP-73 flexible board CN354, 9P
❶ Two screws (BTP2×6)
❿ FK-60 board (Control switch block (FK))
❾ Screw (BTP2×5)
❺ Two screws (BTP2×6)
❹ JK-109 board
❻ Mic holder
❼ Microphone
❸ Connector CN300, 2P
❽ Open the FK lid assembly in the direction of the arrow.

2-11. REMOVAL OF BT HOLDER ASSEMBLY



① Push the knob, open the BT lid assembly and remove it in the direction of the arrow.

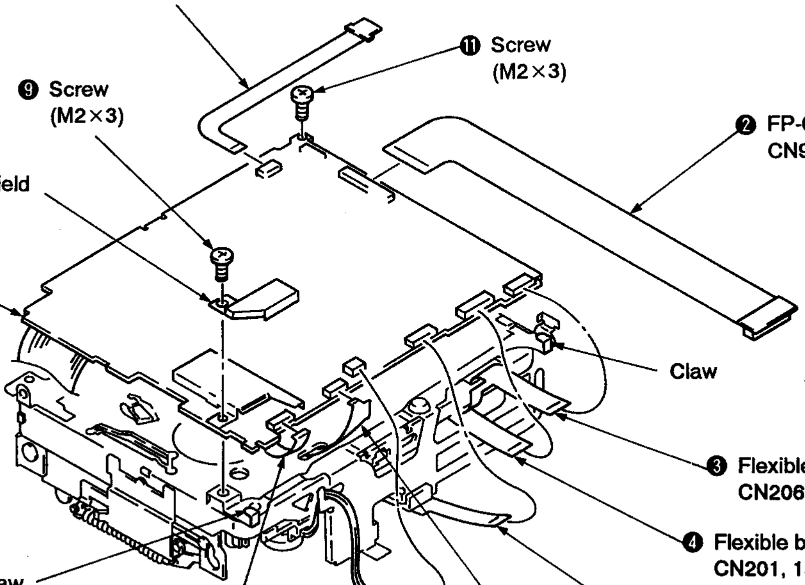
② Four screws (BTP2×6)

③ Push the two section Ⓐ in the direction of the arrow and remove the BT holder assembly.

Section Ⓐ

Front cabinet assembly

2-12. REMOVAL OF VC-134 BOARD



① FP-31 flexible board CN902, 11P

② FP-62 flexible board CN903, 28P

③ Flexible board CN206, 15P

④ Flexible board CN201, 15P

⑤ Flexible board CN204, 12P

⑥ Flexible board CN202, 5P

⑦ Connector CN203, 2P

⑧ Flexible board CN002, 15P

⑨ Screw (M2×3)

⑩ RP connector shield

⑪ Screw (M2×3)

⑫ Remove two claws and remove the VC-134 board.

Claw

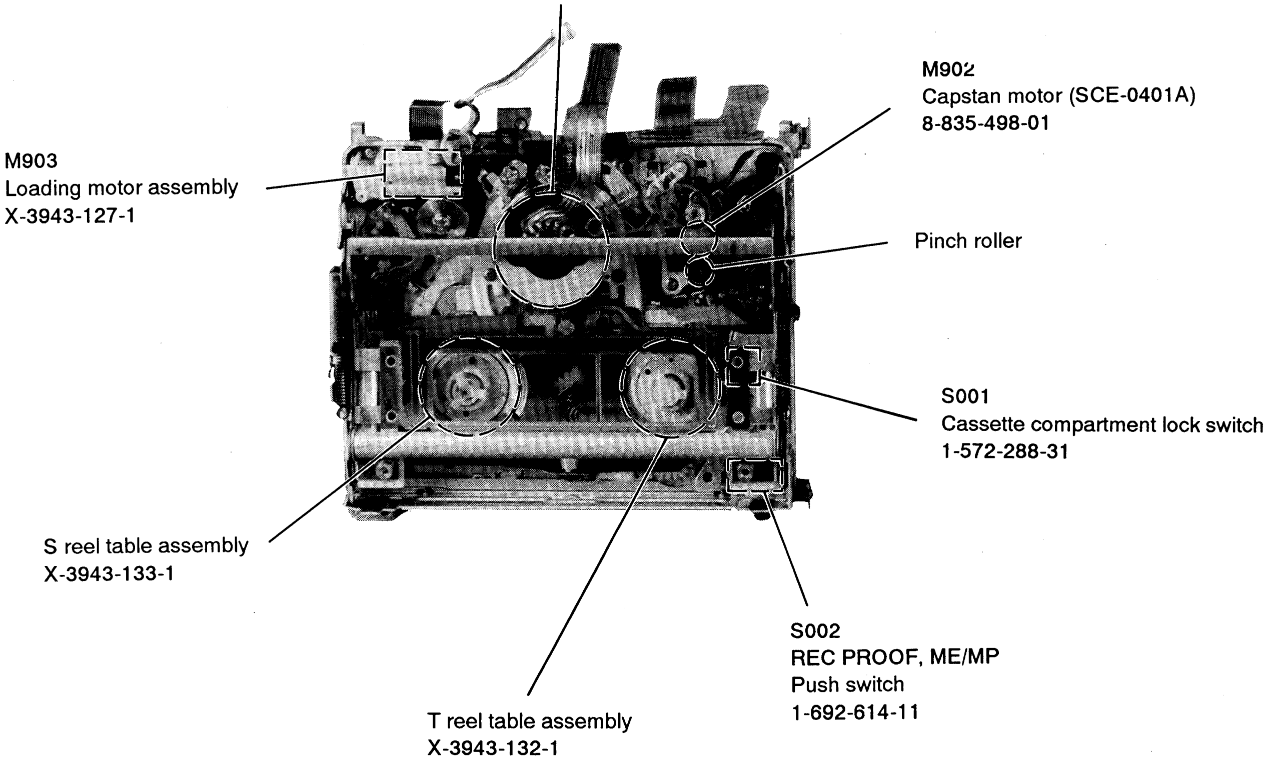
Claw

2-13. INTERNAL VIEWS

— TK Mechanism —

M901

Drum assembly	A-7048-684-A (DGH-0A5A-R)
Rotary upper drum assembly	A-7049-536-A (DGR-76-R-(1)) (Color mark: Green, Green/Red, Black, Black/Red)
	A-7049-534-A (DGR-76-R-(2)) (Color mark: Red, Red/Red, Blue, Blue/Red)

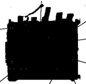

M902
Capstan motor (SCE-0401A)
8-835-498-01
M903
Loading motor assembly
X-3943-127-1
Pinch roller
S001
Cassette compartment lock switch
1-572-288-31
S reel table assembly
X-3943-133-1
S002
REC PROOF, ME/MP
Push switch
1-692-614-11
T reel table assembly
X-3943-132-1

2-13. INTERNAL VIEWS

— TK Mechanism —

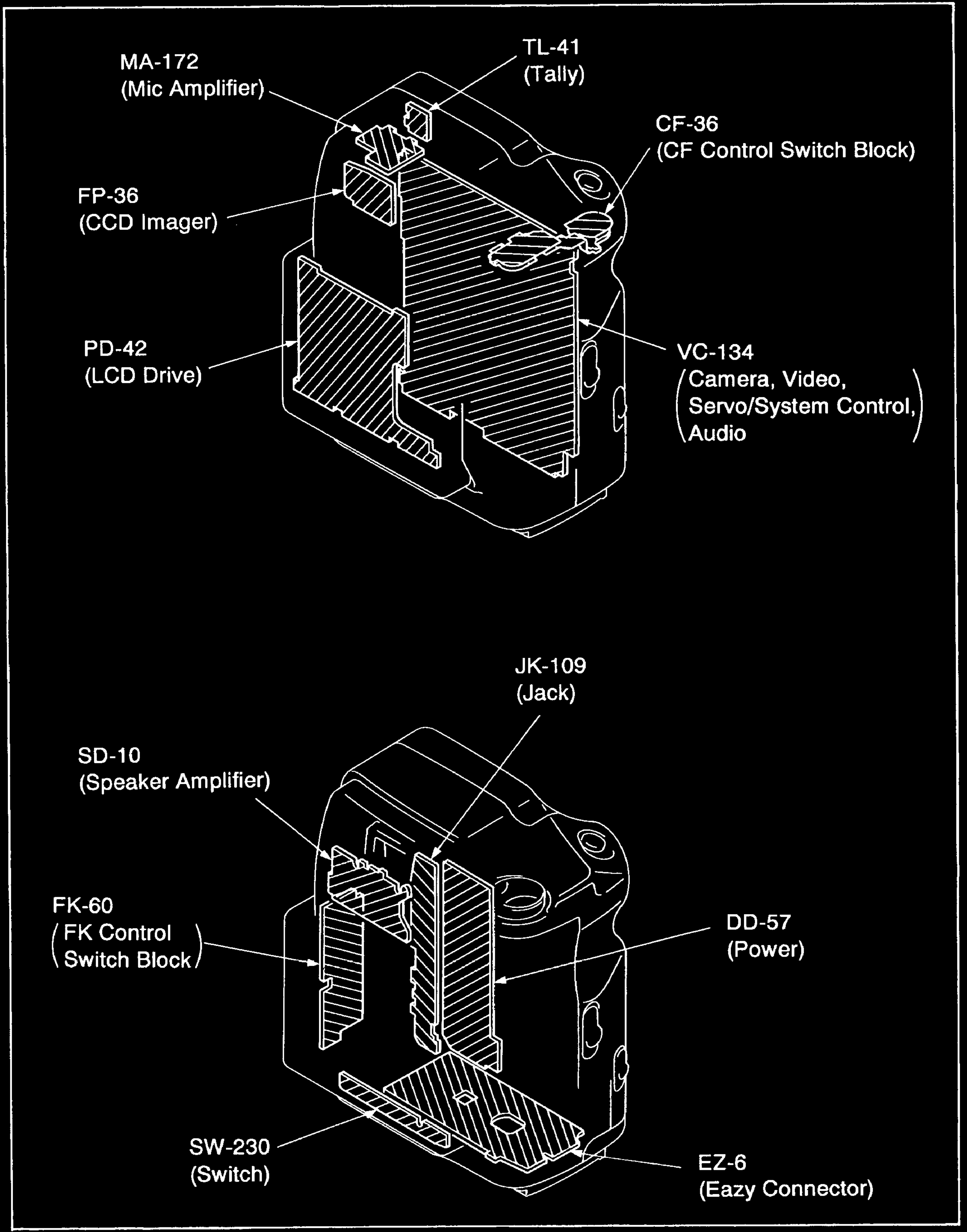
M901

Drum assembly	A-7049-684-A (DGH-0A5A-R)
Rotary upper drum assembly	A-7049-535-A (DGR-76-R-(1)) (Color mark: Green, Green/Red, Black, Black/Red)
	A-7049-534-A (DGR-76-R-(2)) (Color mark: Red, Red/Red, Blue, Blue/Red)

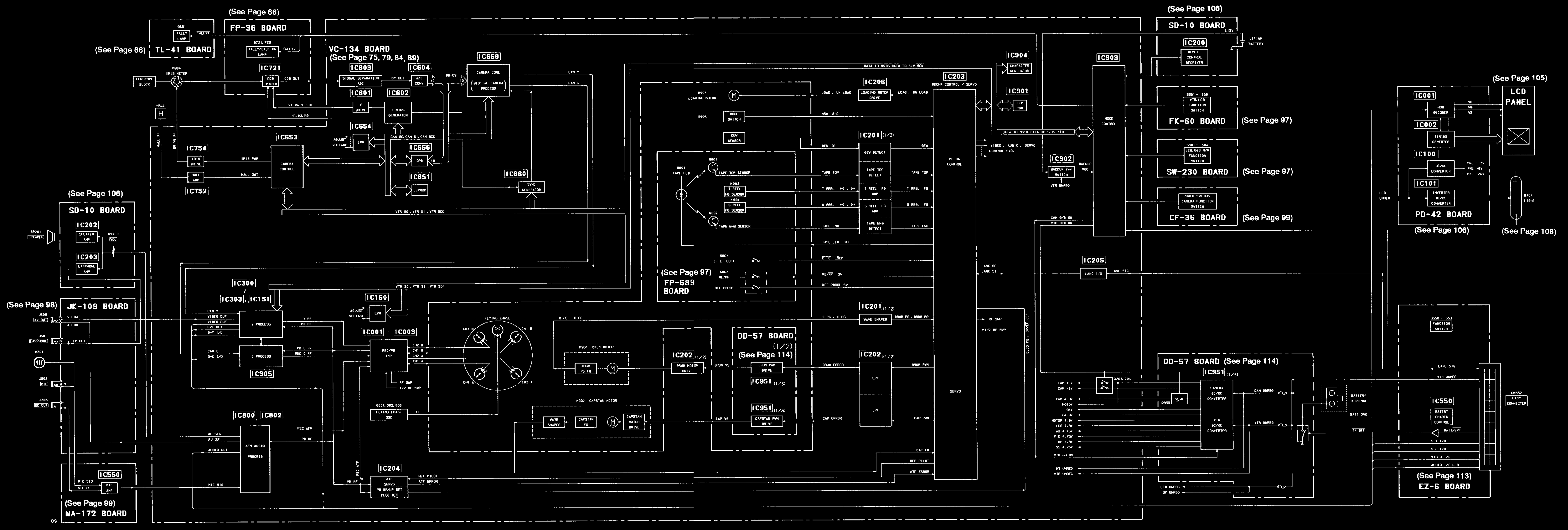

M903
Loading motor assembly
X-3943-127-1
M902
Capstan motor (SCE-0461A)
8-835-498-01
Pinch roller
S001
Cassette compartment lock switch
1-572-288-31
S reel table assembly
X-3943-133-1
T reel table assembly
X-3943-122-1
S002
REC PROOF, ME/MP
Push switch
1-692-614-11

SECTION 3
DIAGRAMS

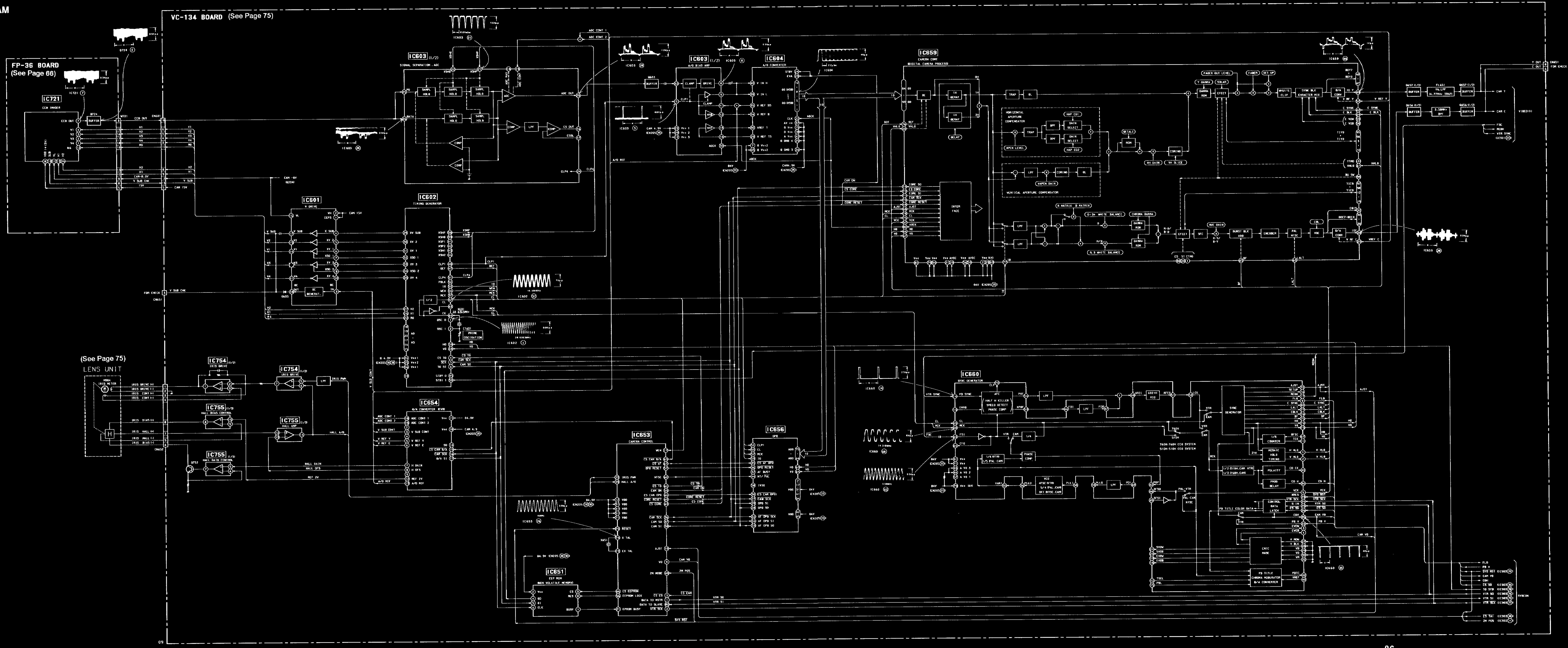
3-1. CIRCUIT BOARDS LOCATION


MA-172
(Mic Amplifier)
TL-41
(Tally)
CF-36
(CF Control Switch Block)
FP-36
(CCD Imager)
PD-42
(LCD Drive)
VC-134
(Camera, Video, Servo/System Control, Audio)
JK-109
(Jack)
SD-10
(Speaker Amplifier)
FK-60
(FK Control Switch Block)
DD-57
(Power)
SW-230
(Switch)
EZ-6
(Eazy Connector)

3-2. OVERALL BLOCK DIAGRAM


(See Page 66)
TL-41 BOARD
(See Page 66)
FP-36 BOARD
IC721
VC-134 BOARD
(See Page 75, 79, 84, 89)
IC603
IC604
IC601
IC602
IC659
IC653
IC654
IC656
IC651
IC660
IC754
IC752
IC206
IC203
IC904
IC901
IC903
IC902
IC201 (1/2)
(See Page 106)
SD-10 BOARD
IC202
IC203
(See Page 98)
JK-109 BOARD
IC300
IC303
IC151
IC305
IC150
IC001
IC003
IC800
IC802
IC204
IC550
(See Page 99)
MA-172 BOARD
(See Page 97)
FP-689 BOARD
DD-57 BOARD (1/2)
(See Page 114)
IC202 (1/2)
IC951 (1/3)
IC201 (1/2)
IC202 (1/2)
IC205
(See Page 106)
SD-10 BOARD
IC200
FK-60 BOARD
(See Page 97)
SW-230 BOARD
(See Page 97)
CF-36 BOARD
(See Page 99)
DD-57 BOARD (See Page 114)
IC951 (1/3)
IC550
(See Page 113)
EZ-6 BOARD
(See Page 105)
LCD PANEL
IC001
IC002
IC100
IC101
PD-42 BOARD
(See Page 106)
(See Page 108)

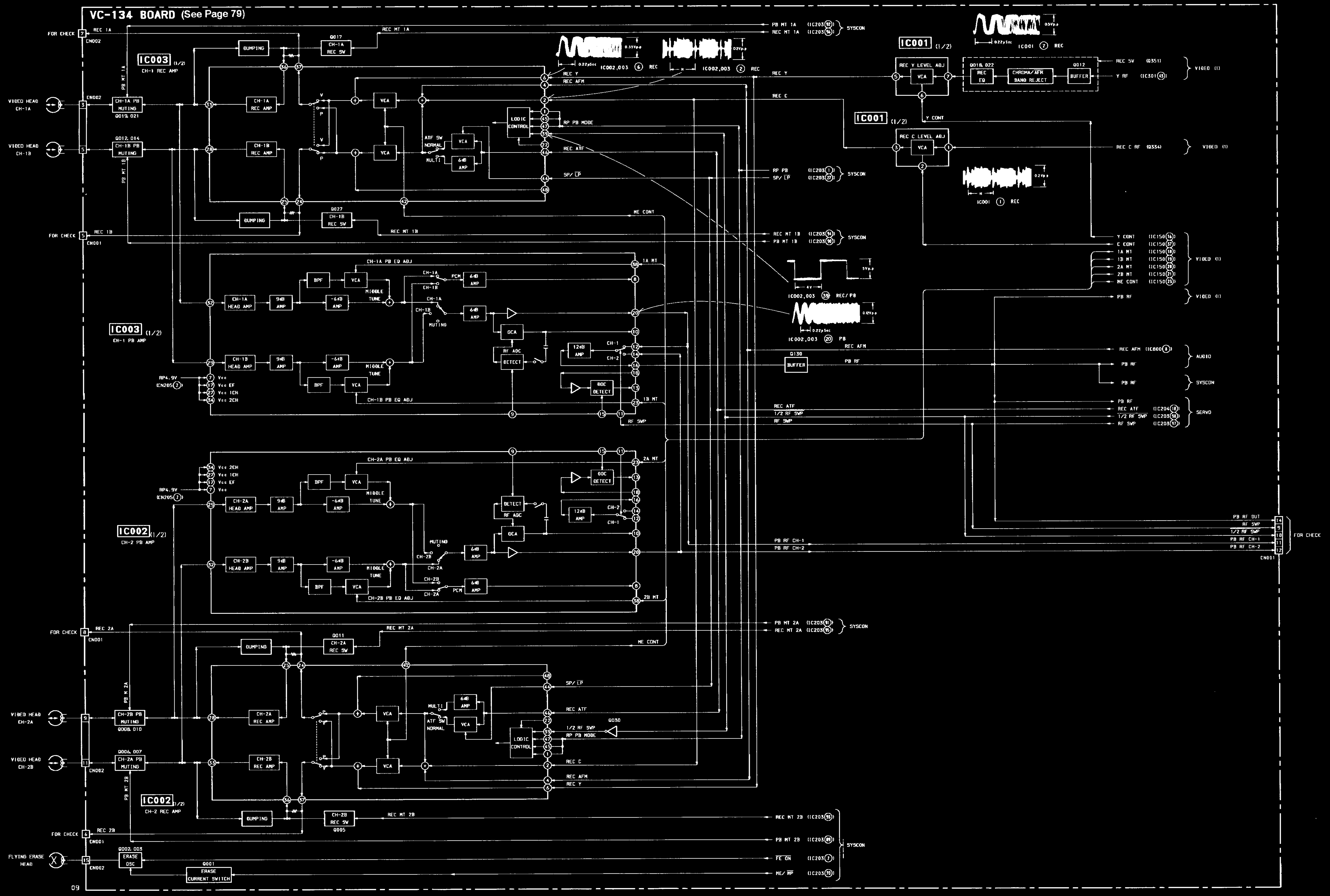
3-3. CAMERA BLOCK DIAGRAM


VC-134 BOARD (See Page 75)
FP-36 BOARD (See Page 66)
IC721
IC603
IC604
IC659
IC601
IC602
(See Page 75)
LENS UNIT
IC754
IC755
IC654
IC653
IC656
IC651
IC660

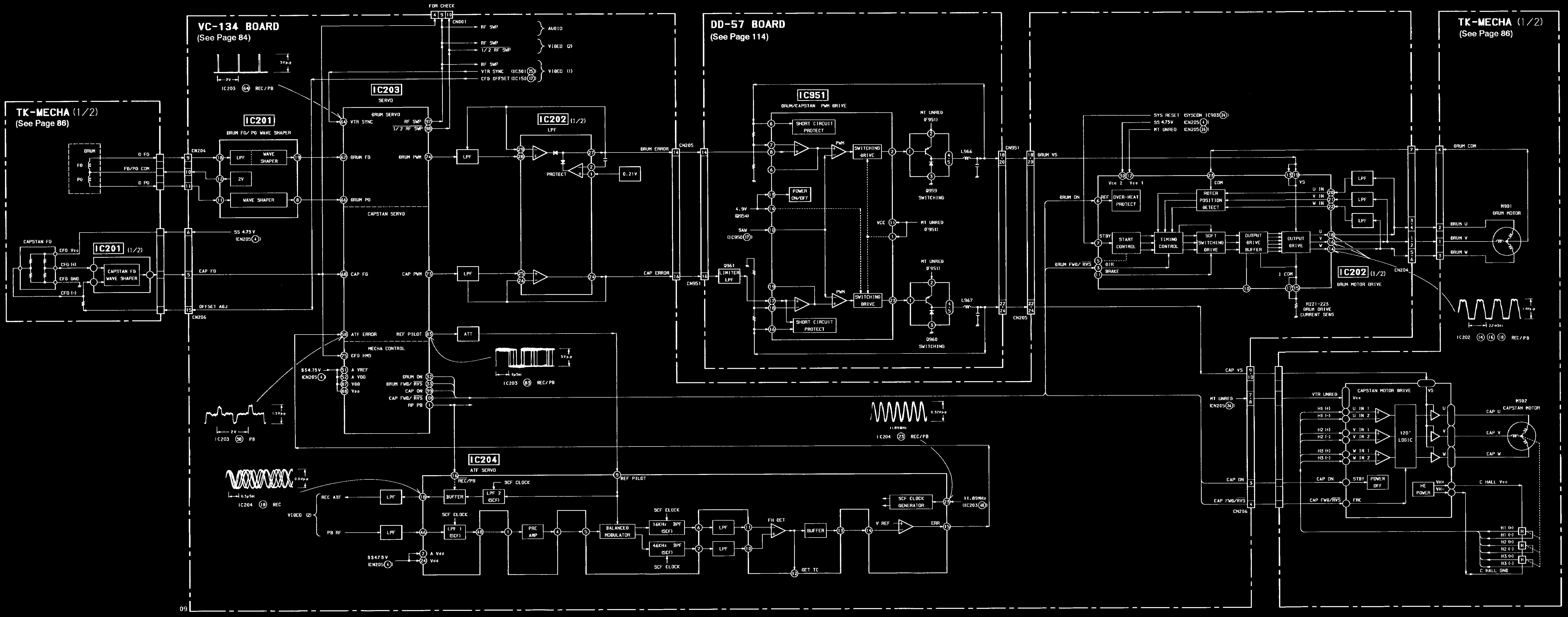
3-4. VIDEO (1) BLOCK DIAGRAM

VC-134 BOARD (See Page 79, 89)
(See Page 113)
EZ-6 BOARD
(See Page 97)
FK-60 BOARD
JK-109 BOARD
(See Page 98)
IC303 (1/2)
IC301 Y PROCESS
IC302 (1/2)
IC305 CHROMA PROCESS
IC300
IC151 CHARACTER MIX
IC150 EVR (D/A CONVERTER)

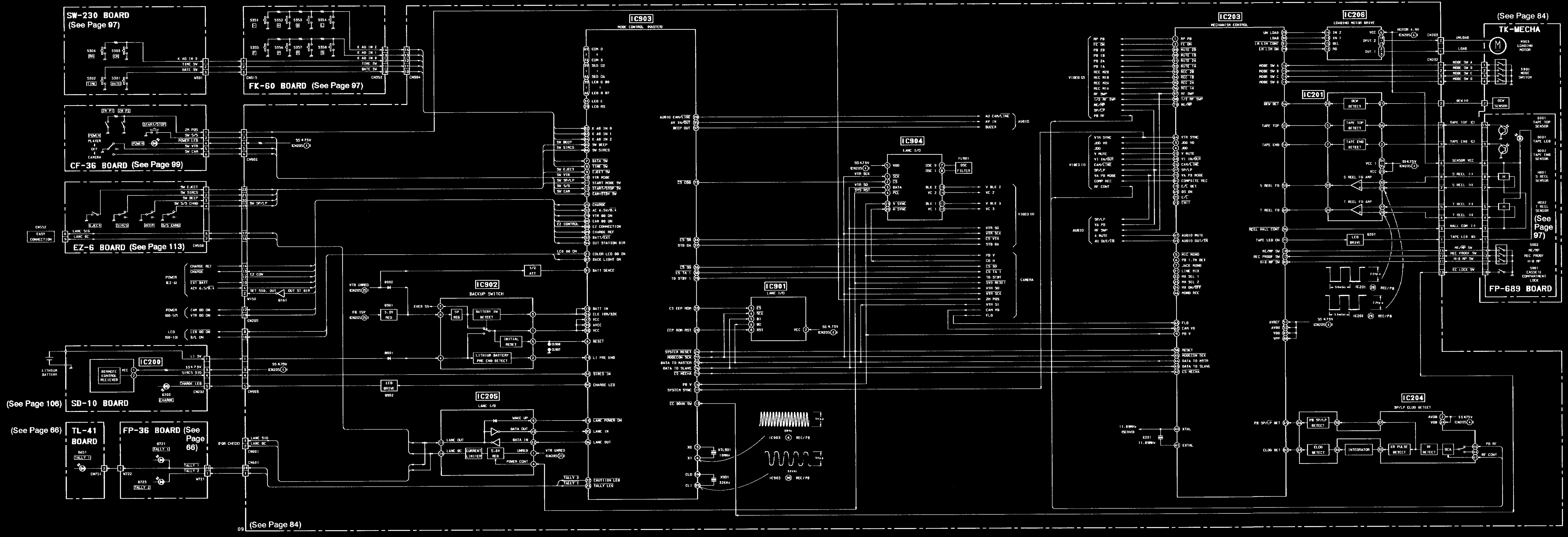
3-5. VIDEO (2) BLOCK DIAGRAM


VC-134 BOARD (See Page 79)
FOR CHECK
REC 1A
CN002
IC003 (1/2)
CH-1 REC AMP
PB MT 1A
VIDEO HEAD CH-1A
VIDEO HEAD CH-1B
CH-1A PB MUTING
Q019, 021
Q012, 014
CH-1B PB MUTING
PB MT 1B
DUMPING
Q017
CH-1A REC SW
REC MT 1A
CH-1A REC AMP
CH-1B REC AMP
Q027
CH-1B REC SW
REC MT 1B
REC 1B
CN001
VCA
ATF SW
NORMAL
MULTI
6dB AMP
LOGIC CONTROL
REC Y
REC AFM
RP PB MODE
REC ATF
SP/LP
ME CONT
0.35Vp-p
0.22μSec
IC002,003 ⑥ REC
0.2Vp-p
H
IC002,003 ② REC
PB MT 1A (IC203㉜)
REC MT 1A (IC203㉞)
SYSCON
IC001 (1/2)
REC Y LEVEL ADJ
0.5Vp-p
IC001 ⑦ REC
Q018, 022
REC EQ
CHROMA/AFM BAND REJECT
Q012
BUFFER
REC 5V (Q351)
Y RF (IC301㊸)
VIDEO (1)
REC C
Y CONT
REC C LEVEL ADJ
REC C RF (Q334)
RP PB (IC203①)
SP/LP (IC203㉒)
IC001 ① REC
REC MT 1B (IC203㉞)
PB MT 1B (IC203㉚)
Y CONT (IC150⑯)
C CONT (IC150㊲)
1A MT (IC150⑱)
1B MT (IC150⑲)
2A MT (IC150⑳)
2B MT (IC150㉑)
ME CONT (IC150㉓)
PB RF
5Vp-p
4V
IC002,003 ㊴ REC/PB
0.12Vp-p
IC002,003 ⑳ PB
REC AFM (IC800⑧)
AUDIO
Q130
BUFFER
REC ATF (IC204⑱)
1/2 RF SWP (IC203㊽)
RF SWP (IC203㊼)
SERVO
IC003 (1/2)
CH-1 PB AMP
CH-1A PB EQ ADJ
BPF
CH-1A HEAD AMP
9dB AMP
-6dB AMP
MIDDLE TUNE
PCM
MUTING
GCA
RF AGC
DETECT
12dB AMP
DOC DETECT
CH-1B HEAD AMP
CH-1B PB EQ ADJ
RP4.9V
CN205②
Vcc
Vcc EF
Vcc 1CH
Vcc 2CH
1A MT
1B MT
RF SWP
2A MT
IC002 (1/2)
CH-2 PB AMP
CH-2A PB EQ ADJ
CH-2A HEAD AMP
CH-2B HEAD AMP
CH-2B PB EQ ADJ
2B MT
PB RF CH-1
PB RF CH-2
PB RF OUT
1/2 RF SWP
CN001
REC 2A
Q011
CH-2A REC SW
REC MT 2A
PB MT 2A (IC203㉛)
REC MT 2A (IC203㉟)
VIDEO HEAD CH-2A
VIDEO HEAD CH-2B
CH-2B PB MUTING
Q008, 010
Q006, 007
CH-2A PB MUTING
PB MT 2A
PB MT 2B
CH-2A REC AMP
CH-2B REC AMP
Q030
IC002 (1/2)
CH-2 REC AMP
CH-2B REC SW
Q005
REC MT 2B
REC 2B
REC MT 2B (IC203㉟)
PB MT 2B (IC203㉙)
FLYING ERASE HEAD
Q002, 003
ERASE OSC
Q001
ERASE CURRENT SWITCH
FE ON (IC203⑦)
ME/MP (IC203⑳)
09

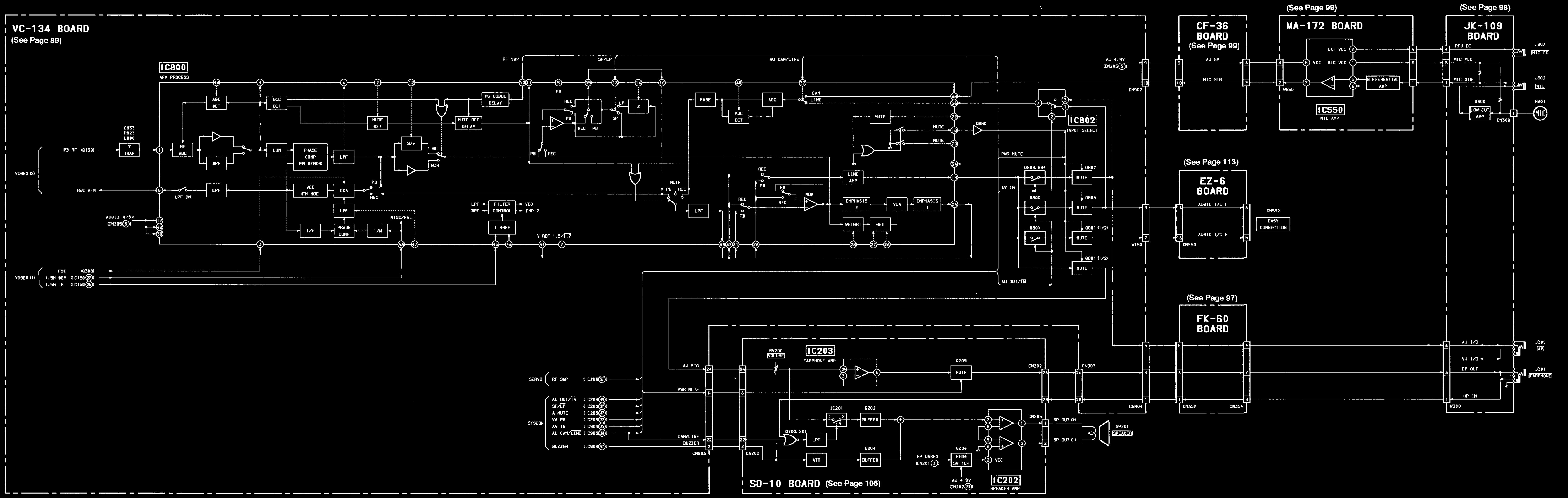
3-6. SERVO BLOCK DIAGRAM


VC-134 BOARD
(See Page 84)
DD-57 BOARD
(See Page 114)
TK-MECHA (1/2)
(See Page 86)
TK-MECHA (1/2)
(See Page 86)
IC201
DRUM FG/PG WAVE SHAPER
IC201 (1/2)
IC203
SERVO
IC202 (1/2)
LPF
IC204
ATF SERVO
IC951
DRUM/CAPSTAN PWM DRIVE
IC202 (1/2)
DRUM MOTOR DRIVE
FOR CHECK
CN001
RF SWP
AUDIO
VIDEO (2)
VIDEO (1)
1/2 RF SWP
VTR SYNC (IC301)
CFG OFFSET (IC150)
DRUM SERVO
VTR SYNC
DRUM FG
DRUM PG
DRUM PWM
CAPSTAN SERVO
CAP FG
CAP PWM
ATF ERROR
REF PILOT
MECHA CONTROL
CFG HMS
A VREF
A VDD
VDD
Vss
DRUM ON
DRUM FWD/RVS
CAP ON
CAP FWD/RVS
RP PB
ATT
WAVE SHAPER
CAPSTAN FG
WAVE SHAPER
DRUM
FG
PG
D FG
FG/PG COM
D PG
CAPSTAN FG
CFG Vcc
CFG (+)
CFG GND
CFG (-)
CN204
CN206
SS 4.75V
(CN205 ①)
CAP FG
OFFSET ADJ
PROTECT
0.21V
DRUM ERROR
CAP ERROR
CN205
CN951
IC203 ⑭ REC/PB
IC203 ㊲ REC/PB
IC203 ㊳ PB
IC204 ⑱ REC
IC204 ㉓ REC/PB
REC ATF
VIDEO (2)
PB RF
LPF
BUFFER
LPF 2 (SCF)
SCF CLOCK
LPF 1 (SCF)
PRE AMP
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
FH DET
DET TC
V REF
ERR
SCF CLOCK GENERATOR
11.89MHz (IC203)
A Vdd
Vdd
REF PILOT
SHORT CIRCUIT PROTECT
POWER ON/OFF
SWITCHING DRIVE
PWM
MT UNREG (Q951)
Q959 SWITCHING
Q960 SWITCHING
Q961 LIMITER LPF
4.9V (Q954)
5AW (IC950)
VCC
L966
L967
SYS RESET (SYSCON IC903)
SS 4.75V (CN205)
MT UNREG (CN205)
DRUM VS
DRUM ON
OVER-HEAT PROTECT
ROTOR POSITION DETECT
COM
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
U IN
V IN
W IN
STBY
REF
DIR
BRAKE
DRUM FWD/RVS
R221-223 DRUM DRIVE CURRENT SENS
DRUM COM
DRUM U
DRUM V
DRUM W
M901 DRUM MOTOR
IC202 ⑭⑯⑱ REC/PB
CAP VS
MT UNREG (CN205)
CAP ON
CAP FWD/RVS
CN204
VTR UNREG
CAPSTAN MOTOR DRIVE
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
FRC
HE POWER
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
M902 CAPSTAN MOTOR
CAP U
CAP V
CAP W
C HALL Vcc
C HALL GND

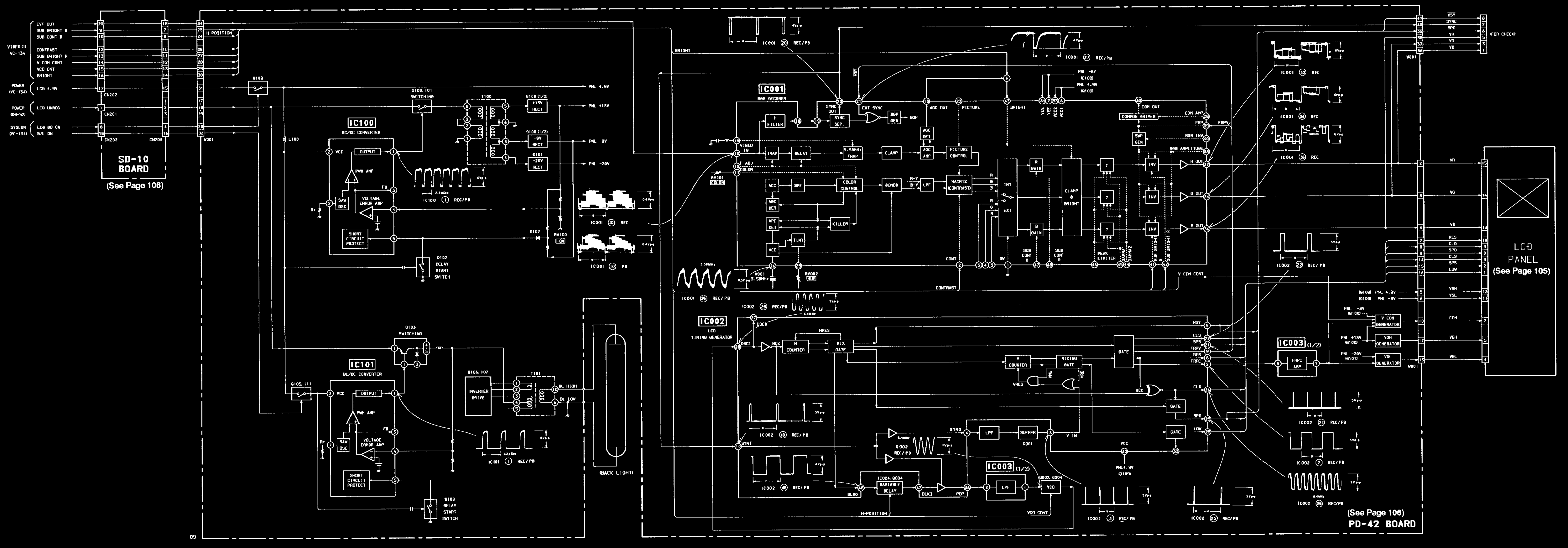
3-7. SYSTEM CONTROL BLOCK DIAGRAM


SW-230 BOARD
(See Page 97)
FK-60 BOARD (See Page 97)
CF-36 BOARD (See Page 99)
EZ-6 BOARD (See Page 113)
CN552
EASY CONNECTION
LITHIUM BATTERY
IC200
(See Page 106)
SD-10 BOARD
(See Page 66)
TL-41 BOARD
FP-36 BOARD (See Page 66)
IC903
MODE CONTROL (MASTER)
IC902
BACKUP SWITCH
IC205
LANC I/O
IC904
LANC I/O
IC901
LANC I/O
AUDIO
VIDEO (1)
CAMERA
IC203
MECHANISM CONTROL
VIDEO (2)
VIDEO (1)
AUDIO
IC206
LOADING MOTOR DRIVE
IC201
IC204
SP/LP CLOG DETECT
(See Page 84)
TK-MECHA
M903
LOADING MOTOR
(See Page 97)
FP-689 BOARD
(See Page 84)

3-8. AUDIO BLOCK DIAGRAM


VC-134 BOARD
(See Page 89)
IC800
AFM PROCESS
C833
R823
L800
Y TRAP
VIDEO (2)
PB RF (Q130)
REC AFM
RF AGC
AGC DET
BPF
LIM
DOC DET
PHASE COMP (FM DEMOD)
LPF
MUTE DET
S/H
DO
NOR
PG DOBUL DELAY
MUTE OFF DELAY
LPF ON
VCO (FM MOD)
CCA
PB
REC
PHASE COMP
1/H
1/N
NTSC/PAL
AUDIO 4.75V (CN205 ⑤)
FILTER CONTROL
LPF
BPF
VCO
EMP 2
I RREF
V REF 1.5/1.7
VIDEO (1)
FSC (Q308)
1.5M DEV (IC150 ㉗)
1.5M IR (IC150 ㉖)
RF SWP
SP/LP
AU CAM/LINE
LP
SP
Z
FADE
AGC DET
AGC
CAM
LINE
MUTE
Q880
LINE AMP
MOA
EMPHASIS 2
VCA
EMPHASIS 1
WEIGHT
DET
IC802
INPUT SELECT
PWR MUTE
AV IN
Q883, 884
Q882
Q800
Q885
Q801
Q881 (1/2)
AU OUT/IN
AU 4.9V (CN205 ⑤)
CN902
W150
CN903
CN904
SERVO
RF SWP (IC203 ⑰)
SYSCON
AU OUT/IN (IC203 ㊾)
SP/LP (IC203 ㉗)
A MUTE (IC203 ㊼)
VA PB (IC203 (72))
AV IN (IC903 ㉟)
AU CAM/LINE (IC903 ㉘)
BUZZER (IC903 ㊷)
AU SIG
PWR MUTE
CAM/LINE
BUZZER
RV200
VOLUME
IC203
EARPHONE AMP
Q209
MUTE
CN202
IC201
Q202
BUFFER
Q200, 201
LPF
ATT
Q204
BUFFER
CN205
SP OUT (+)
SP OUT (−)
SP201
SPEAKER
SP UNREG (CN201 ②)
REG SWITCH
VCC
AU 4.9V (CN202 ㉓)
IC202
SPEAKER AMP
SD-10 BOARD (See Page 106)
CF-36 BOARD
(See Page 99)
AU 5V
MIC SIG
(See Page 99)
MA-172 BOARD
EXT VCC
VCC
MIC VCC
DIFFERENTIAL AMP
IC550
MIC AMP
W550
(See Page 98)
JK-109 BOARD
RFU DC
MIC VCC
MIC SIG
J303
MIC DC
J302
MIC
Q300
LOW-CUT AMP
CN300
M301
MIC
(See Page 113)
EZ-6 BOARD
AUDIO I/O L
AUDIO I/O R
CN550
CN552
EASY CONNECTION
(See Page 97)
FK-60 BOARD
CN352
CN354
AJ I/O
VJ I/O
EP OUT
HP IN
W300
J300
AV
J301
EARPHONE

3-9. LCD BLOCK DIAGRAM


SD-10
BOARD
(See Page 106)
IC100
DC/DC CONVERTER
IC101
DC/DC CONVERTER
Q100, 101 SWITCHING
T100
Q103 SWITCHING
Q105, 111
Q106, 107
INVERTER DRIVE
T101
BL HIGH
BL LOW
(BACK LIGHT)
Q102 DELAY START SWITCH
Q108 DELAY START SWITCH
IC001
RGB DECODER
IC002
LCD TIMING GENERATOR
IC003 (1/2)
MATRIX (CONTRAST)
CLAMP & BRIGHT
COMMON DRIVER
V COM GENERATOR
VGH GENERATOR
VGL GENERATOR
LCD
PANEL
(See Page 105)
(FOR CHECK)
(See Page 106)
PD-42 BOARD

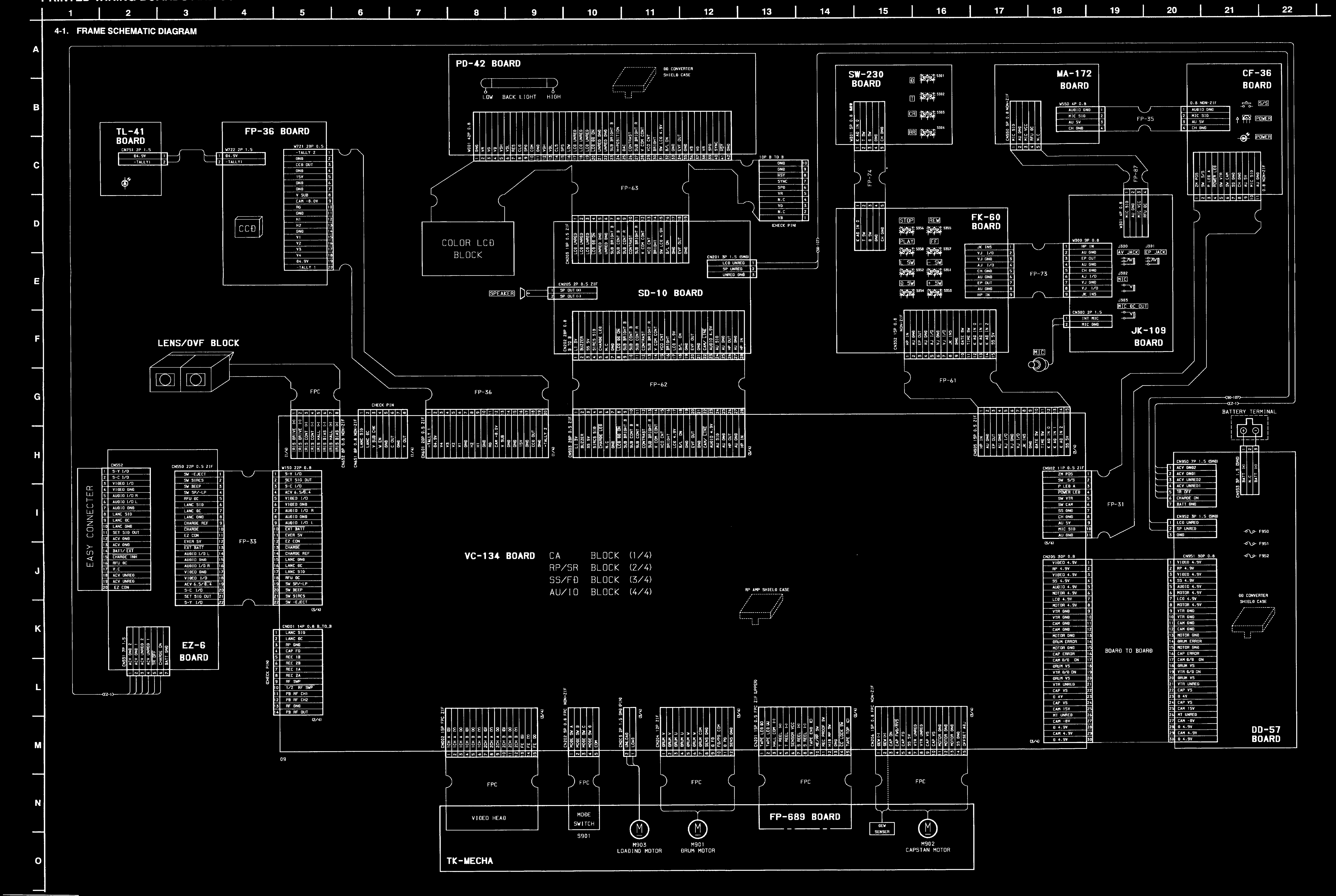
3-10. POWER BLOCK DIAGRAM

BATTERY TERMINAL
DD-57 BOARD (See Page 114)
EZ-6 BOARD (See Page 113)
IC550 CHARGE CURRENT CONTROL
IC550 FULL CHARGE DETECT
LIMITER
PROTECT DETECT
CHARGE CURRENT CONTROL
CHARGE INHIBIT
EASY CONNECTER
IC950
IC951
(See Page 75, 79, 84, 89)
IC201
IC202
IC203
IC204
IC206
IC001, 150, 151
IC300-303, 305
IC002
IC003
IC800
IC802
IC901
IC904
IC601
IC602
IC603
IC604
IC651
IC653
IC654
IC656
IC659
IC660
IC754
IC755
IC205 LANC I/O
IC903 MODE CONTROL
IC902
TK MECHA (See Page 86)
REEL FG SENSOR TAPE LED
M902 CAPSTAN MOTOR
FP-36 BOARD (See Page 66)
IC721
TALLY/CAUTION LED
CCD IMAGER
TL-41 BOARD (See Page 66)
TALLY LED
SD-10 BOARD (See Page 106)
IC202 SPEAKER AMP
IC200 REMOTE CONTROL RECIEVER
IC203 EARPHONE AMP
IC201 SPEAKER SWITCH
CHARGE LED
LITHIUM BATTERY
PD-21 BOARD (See Page 106)
IC101 DC/DC CONVERTER
INVERTER DC/AC CONVERTER
IC002-004 LCD TIMING GENERATOR
IC001 RGB DECODER
IC100 DC/DC CONVERTER
BACK LIGHT
LCD PANEL (See Page 105)
FK-60 BOARD (See Page 97)
FUNCTION SWITCH
CF-36 BOARD (See Page 99)
MA-172 BOARD (See Page 99)
IC550 MIC AMP
JK-109 BOARD (See Page 98)
MIC FILTER
MIC DC OUT

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


TL-41 BOARD
FP-36 BOARD
CCD
PD-42 BOARD
LOW BACK LIGHT HIGH
DD CONVERTER SHIELD CASE
COLOR LCD BLOCK
FP-63
SD-10 BOARD
SPEAKER
SW-230 BOARD
FP-74
MA-172 BOARD
FP-35
CF-36 BOARD
FP-67
FK-60 BOARD
STOP
REW
PLAY
FF
FP-73
JK-109 BOARD
MIC
FP-61
LENS/OVF BLOCK
FPC
FP-36
CHECK PIN
FP-62
BATTERY TERMINAL
EASY CONNECTER
FP-33
EZ-6 BOARD
VC-134 BOARD CA BLOCK (1/4)
RP/SR BLOCK (2/4)
SS/FD BLOCK (3/4)
AU/IO BLOCK (4/4)
RP AMP SHIELD CASE
FP-31
BOARD TO BOARD
DD CONVERTER SHIELD CASE
DD-57 BOARD
VIDEO HEAD
MODE SWITCH
S901
M903 LOADING MOTOR
M901 DRUM MOTOR
FP-689 BOARD
DEW SENSOR
M902 CAPSTAN MOTOR
TK-MECHA
A B C D E F G H I J K L M N O
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ▨ : Pattern from the side which enables seeing. (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- Through hole is omitted.

* Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts. New parts must be attached after removal of chip. Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted. Chip resistor are 1/10W unless otherwise noted. kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF. 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- ☐ : adjustment for repeair.*
- ―― : B+ Line.*
- - - - : B– Line.*
- ⇨ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

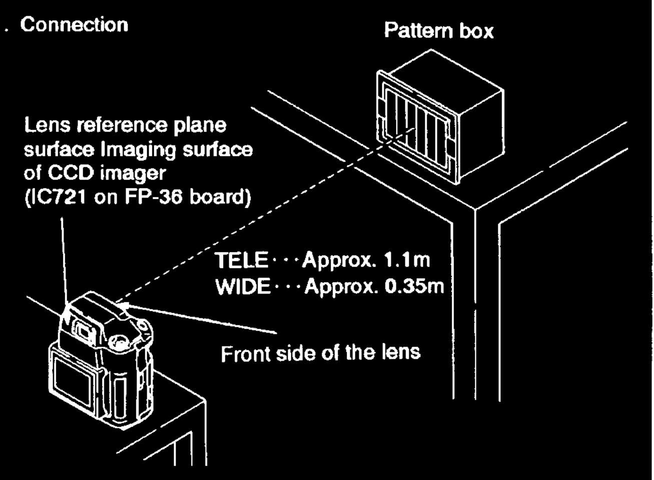
*: indicated by the color red.

- **Measuring conditions voltage value and waveform.**

(CAMERA block)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.* Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
Lens reference plane surface Imaging surface of CCD imager (IC721 on FP-36 board)
TELE···Approx. 1.1m
WIDE···Approx. 0.35m
Front side of the lens

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

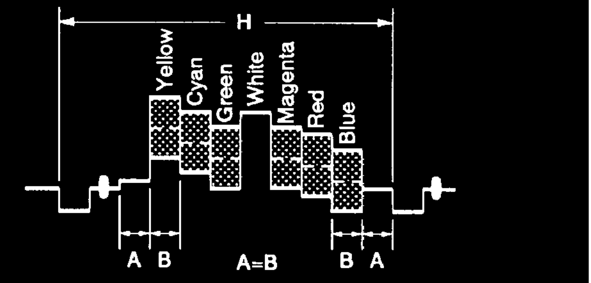

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

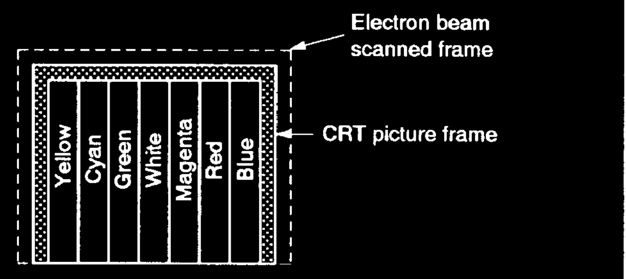

Electron beam scanned frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
CRT picture frame

Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, AUDIO, LCD CONTROL)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ▨ : Pattern from the side which enables seeing. (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- Through hole is omitted.

* Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.*
- ─ : B+ Line.*
- --- : B− Line.*
- ⇨ : IN/OUT direction of (+, −) B LINE.*
- Circled numbers refer to waveforms.*

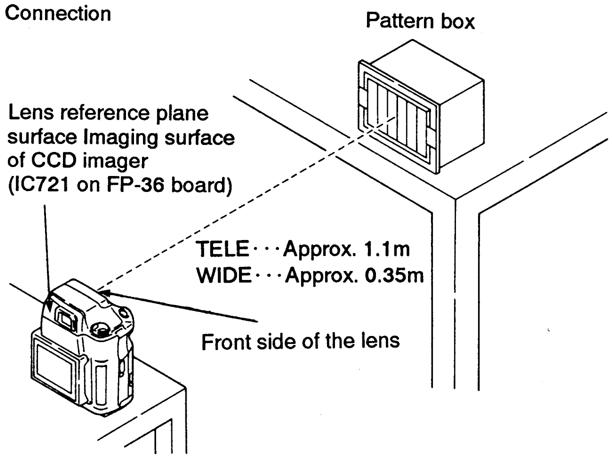
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

*: indicated by the color red.

- **Measuring conditions voltage value and waveform. (CAMERA block)**
- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.*
  Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
Lens reference plane surface Imaging surface of CCD imager (IC721 on FP-36 board)
TELE···Approx. 1.1m
WIDE···Approx. 0.35m
Front side of the lens

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

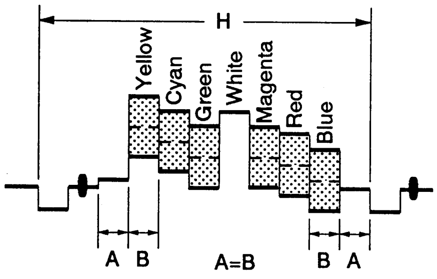

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

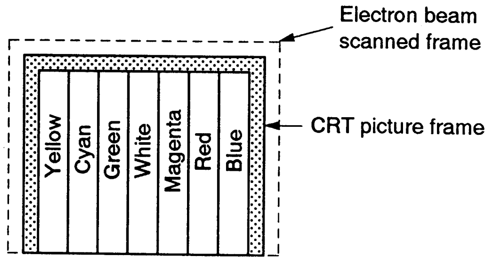

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, AUDIO, LCD CONTROL)
- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- ■ : Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- Through hole is omitted.

* Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minute side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.*
- ━ : B+ Line.*
- - - - : B– Line.*
- ⇒ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

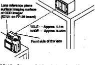
*: Indicated by the color red.

- **Measuring conditions voltage value and waveform.**

(CAMERA block)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.*
  Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
Lens reference plane surface imaging surface of CCD Imager (IC721 on FP-38 board)
TELE···Approx. 1.1m
WIDE···Approx. 0.35m
Front side of the lens

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

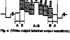

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A–B
B
A

Fig. a (Video output terminal output waveform)

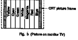
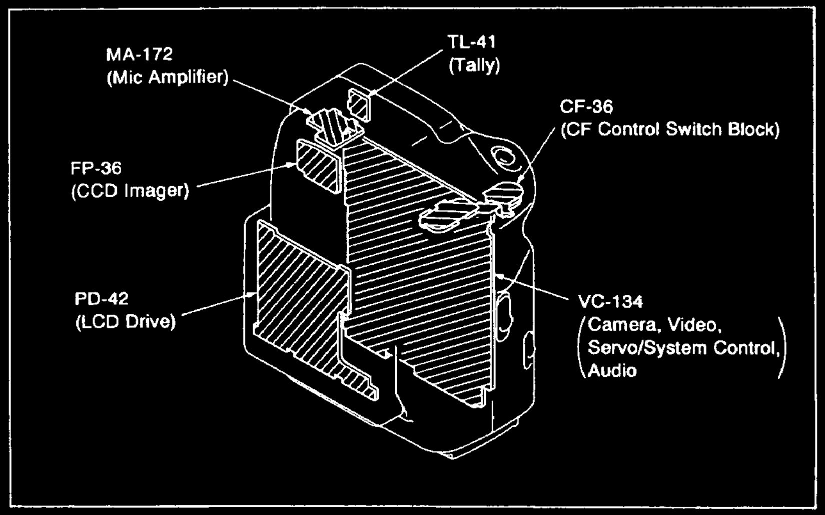

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

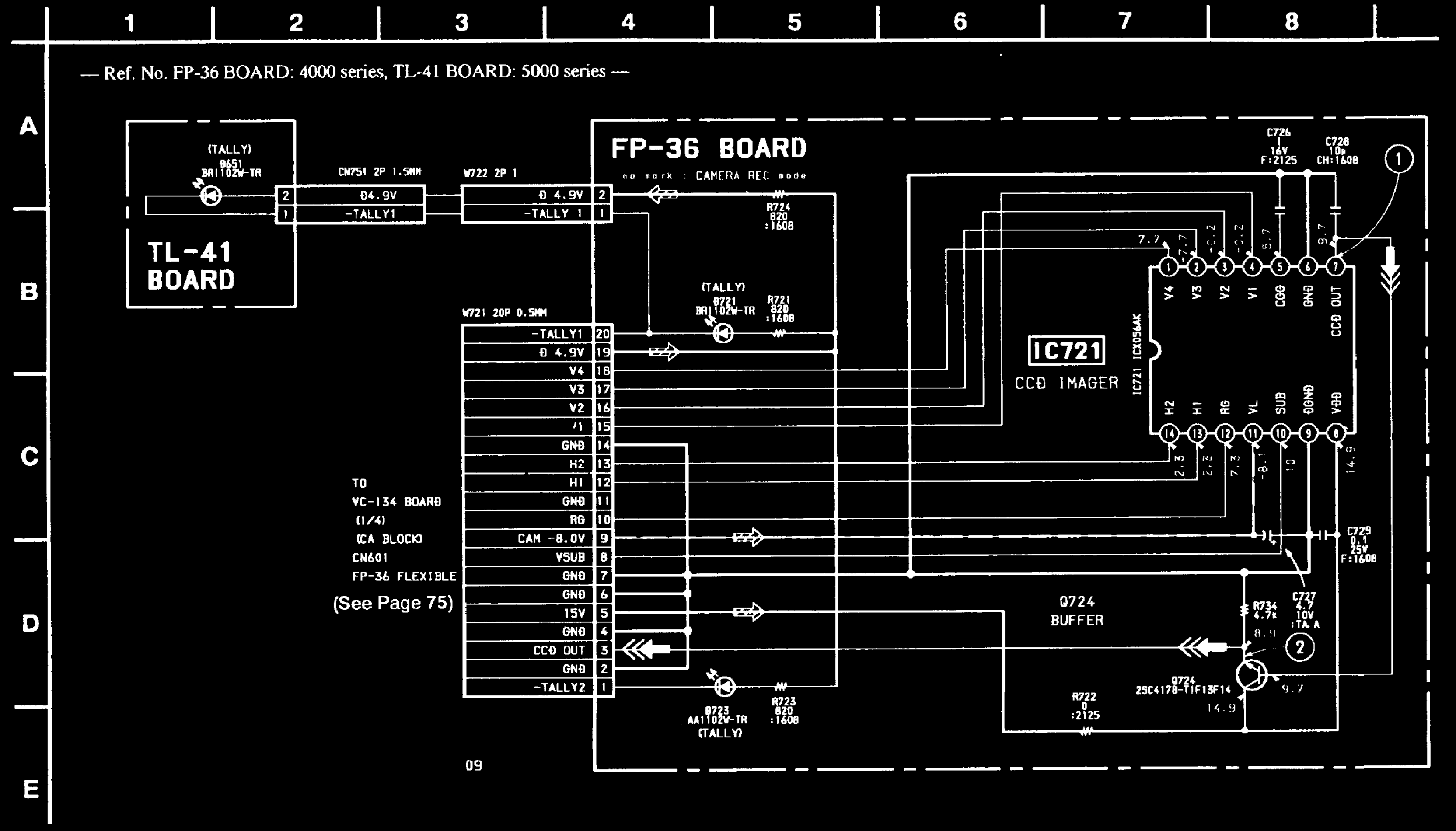
Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, AUDIO, LCD CONTROL)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*


MA-172
(Mic Amplifier)
TL-41
(Tally)
CF-36
(CF Control Switch Block)
FP-36
(CCD Imager)
PD-42
(LCD Drive)
VC-134
(Camera, Video, Servo/System Control, Audio)

FP-36 (CCD IMAGER), TL-41 (TALLY) SCHEMATIC DIAGRAMS


— Ref. No. FP-36 BOARD: 4000 series, TL-41 BOARD: 5000 series —

1
2
3
4
5
6
7
8
A
B
C
D
E
TL-41 BOARD
(TALLY)
D651
BR1102W-TR
CN751 2P 1.5MM
D4.9V
-TALLY1
W722 2P 1
D 4.9V
-TALLY 1
FP-36 BOARD
no mark : CAMERA REC mode
R724
820
:1608
(TALLY)
D721
BR1102W-TR
R721
820
:1608
W721 20P 0.5MM
-TALLY1
D 4.9V
V4
V3
V2
V1
GND
H2
H1
GND
RG
CAM -8.0V
VSUB
GND
GND
15V
GND
CCD OUT
GND
-TALLY2
TO
VC-134 BOARD
(1/4)
(CA BLOCK)
CN601
FP-36 FLEXIBLE
(See Page 75)
D723
AA1102W-TR
(TALLY)
R723
820
:1608
09
IC721
CCD IMAGER
IC721 ICX056AK
V4
V3
V2
V1
CGG
GND
CCD OUT
H2
H1
RG
VL
SUB
GND
VDD
7.7
-7.7
-0.2
-0.2
5.7
9.7
2.3
2.3
7.3
-8.1
10
14.9
C726
1
16V
F:2125
C728
10p
CH:1608
①
C729
0.1
25V
F:1608
C727
4.7
10V
:TA A
Q724
BUFFER
R734
4.7k
8.9
②
Q724
2SC4178-T1F13F14
9.7
14.9
R722
0
:2125

Note on the CCD Imager replacement

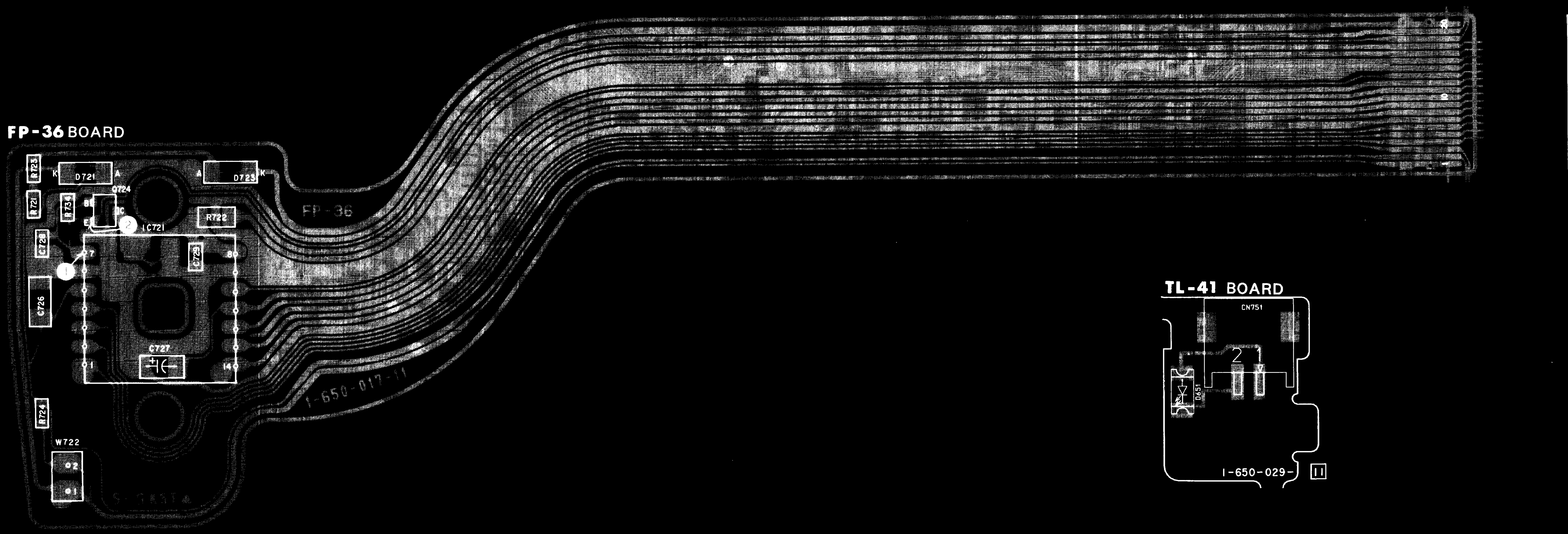
- Some of this units require the correction data by the CCD imager (IC721 on FP-36 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC651 on VC-134 board), and also written on the CCD data label put on the shield case (upper) of the DD-57 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted FP-36 board supplied as the repair parts.
  When replacing the FP-36 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

- **SIGNAL PATH**

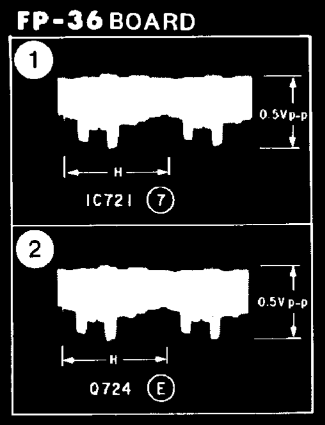
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡≫
PB			

FP-36 (CCD IMAGER), TL-41 (TALLY) PRINTED WIRING BOARDS

— Ref. No. FP-36 BOARD: 4000 series, TL-41 BOARD: 5000 series —


FP-36 BOARD
R723
K
D721
A
A
D723
K
Q724
R721
R734
IC721
R722
C728
C729
7
8
C726
C727
1
14
1
R724
W722
2
1
FP-36
1-650-017-11

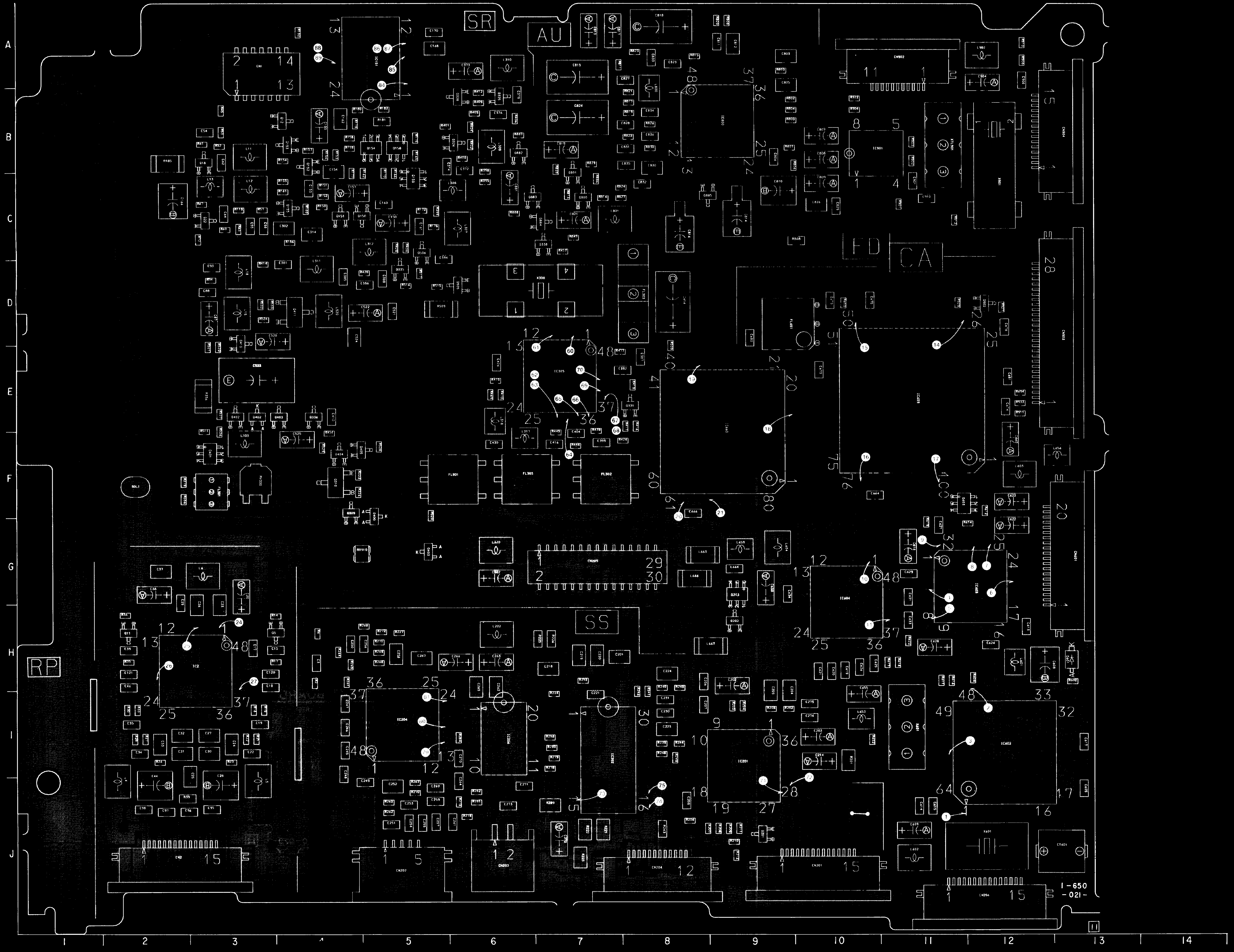
TL-41 BOARD
CN751
2
1
D651
1-650-029-
11



VC-134 (CAMERA, VIDEO, SERVO/SYSTEM CONTROL, AUDIO) PRINTED WIRING BOARD

— Ref. No. VC-134 BOARD: 1000 series —

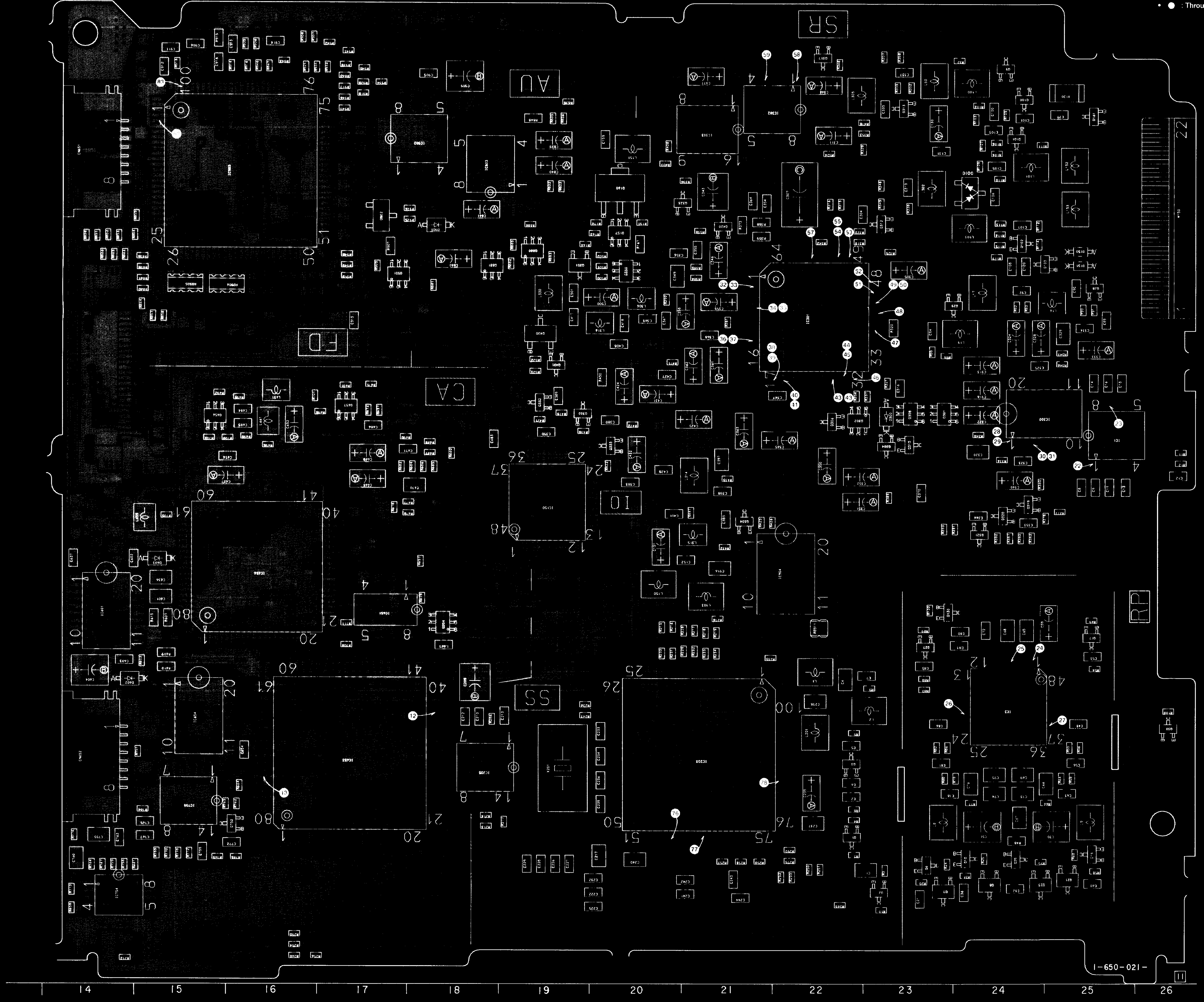
VC-134 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
9
10
11
12
13
14
SR
AU
FD
CA
SS
RP
IC2
IC204
IC201
IC602
IC604
CN202
CN203
CN205
CN201
CN206
X300
X601
FL301
FL305
FL302
1-650-021-
11

VC-134 (CAMERA, VIDEO, SERVO/SYSTEM CONTROL, AUDIO) PRINTED WIRING BOARD

— Ref. No. VC-134 BOARD: 1000 series —

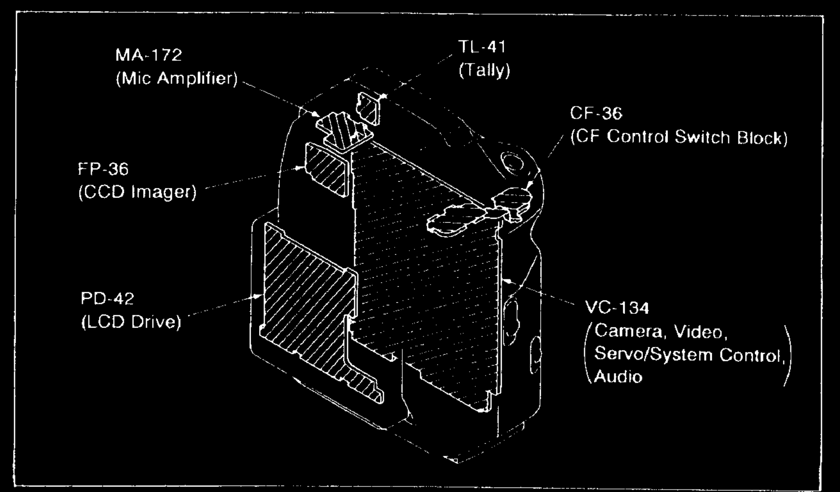
VC-134 BOARD (CONDUCTOR SIDE)


AU
SR
CA
FD
IO
SS
RP
1-650-021-
11
14
15
16
17
18
19
20
21
22
23
24
25
26

- **For printed wiring boards.**
- VC-134 board is a six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- ● : Through hole is omitted.

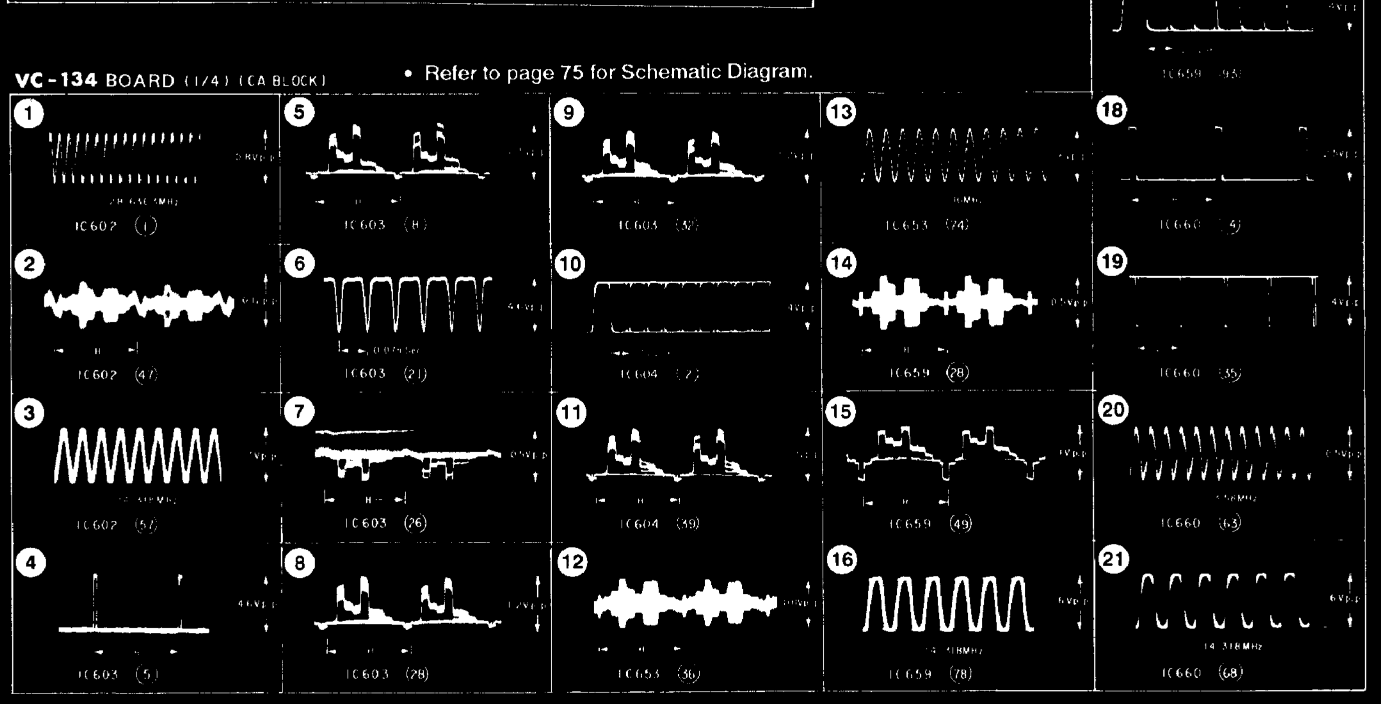
Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.


MA-172
(Mic Amplifier)
TL-41
(Tally)
CF-36
(CF Control Switch Block)
FP-36
(CCD Imager)
PD-42
(LCD Drive)
VC-134
(Camera, Video, Servo/System Control, Audio)

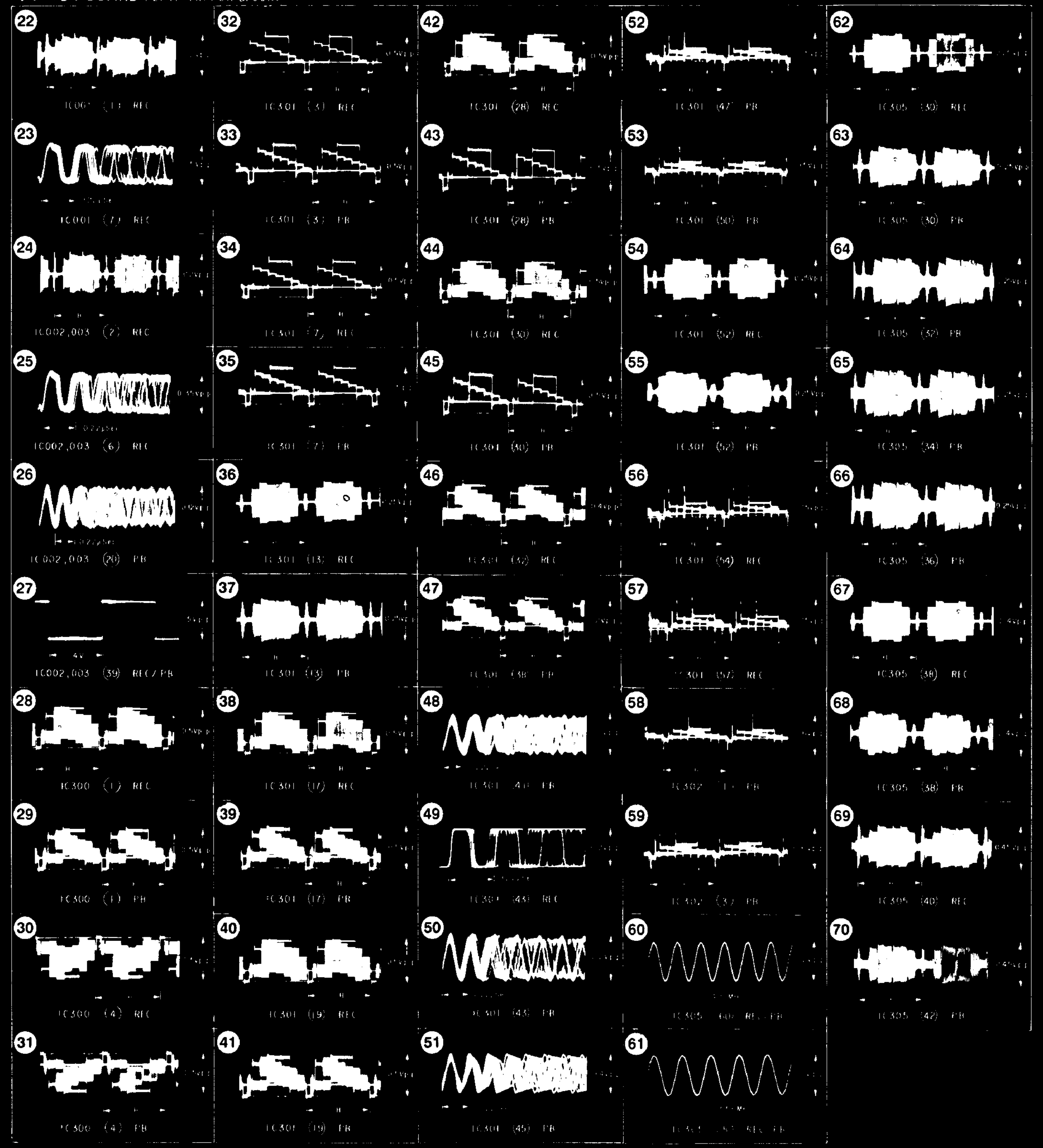
VC-134 BOARD (1/4) (CA BLOCK)

- Refer to page 75 for Schematic Diagram.



VC-134 BOARD (2/4) (RF/SR BLOCK)

- Refer to page 79 for Schematic Diagram.



VC-134 (CAMERA) SCHEMATIC DIAGRAM

- Refer to page 68 to 73 for Printed Wiring Board.
- Refer to page 74 for Waveform.

— Ref. No. VC-134 BOARD: 1000 series —
VC-134 BOARD (1/4)
(CA BLOCK)
CN652 8P 0.8MM ZIF
IRIS DRIVE (+)
IRIS DRIVE (−)
IRIS CONT (+)
IRIS CONT (−)
IRIS HALL (−)
IRIS BIAS (−)
IRIS HALL (+)
IRIS BIAS (+)
TO LENS/OVF BLOCK
CN601 20P 0.5MM ZIF
-TALLY2
GND
CCD OUT
15V
VSUB
CAM -8.0V
RG
H1
H2
V1
V2
V3
V4
D 4.9V
-TALLY1
TO FP-36 BOARD W721
(See Page 66)
IC601 V DRIVE
IC602 TIMING GENERATOR
IC603 SYNC SEPARATION, AGC CONTROL
IC604 10bit A/D CONVERTER
Q603 BUFFER
IC651 EEP ROM (NON VOLATILE MEMORY)
IC653 CAMERA CONTROL
IC654 D/A CONVERTER
IC656 DPB
IC659 CAMERA CORE (DIGITAL CAMERA PROCESS)
IC660 SYNC GENERATOR
IC754 IRIS DRIVE
Q752 GAIN CONTROL
IC755 HALL AMP
V SUB BUFFER
HALL GAIN CONTROL
HALL BIAS CONTROL
HALL AMP
Q657 CAM Y BUFFER
Q656 CAM C BUFFER
-TALLY2
-TALLY1
CGH
-CS SG
TG STB
ZM POS
-VTR SCK
VTR SO
VTR SI
-SYS RST
-CS TAI
TO VC-134 BOARD (3/4) (SS/FD BLOCK) ①
(See Page 86, 87)
FSC
REGH
VTR SYNC
TO VC-134 BOARD (2/4) (RP/SR BLOCK) ②
(See Page 83)
CAM Y
GND
CAM C
TO VC-134 BOARD (4/4) (AU/IO BLOCK) ③
(See Page 92)
FLD
PB V
CAM VD
D 4V
GND
CAM 4.9V
CAM -8V
CAM 15V
D 4.9V
TO VC-134 BOARD (3/4) (SS/FD BLOCK) ④
(See Page 84)
CHECK PIN
LANC SIG
LANC DC
V SUB CHK
V EN
GND
C OUT
Y OUT
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

- SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡≫	➡⋙
PB			

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

• SIGNAL PATH

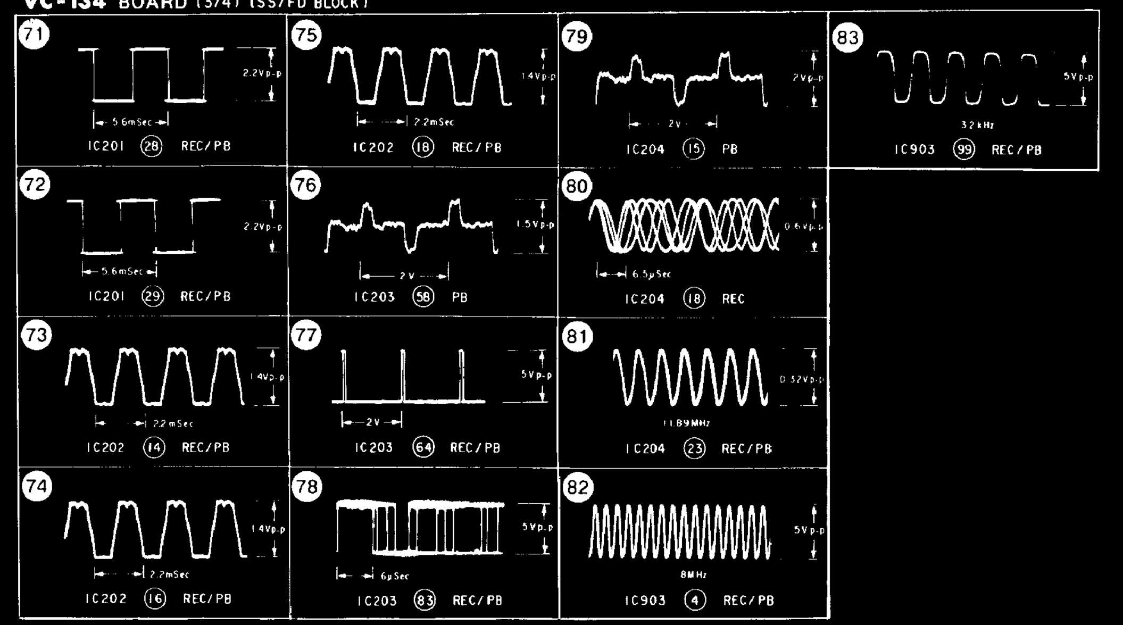
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		▷

VC-134 (VIDEO) SCHEMATIC DIAGRAM

- Refer to page 68 to 73 for Printed Wiring Board.
- Refer to page 74 for Waveform.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
A
B
C
D
E
F
G
H
I
J
K
L
M
— Ref. No. VC-134 BOARD: 1000 series —
VC-134 BOARD (2/4)
(RP/SR BLOCK)
VIDEO HEAD (DRUM MOTOR)
FLYING ERASE
IC001
REC Y LEVEL
REC C LEVEL
IC002
2CH REC/PB AMP
IC003
1CH REC/PB AMP
IC300
1H DELAY X4 PLL
IC301
Y PROCESS
IC302
IC303
VCA
IC305
C PROCESS
PB MT1A
PB MT2A
PB MT1B
PB MT2B
REC MT1A
REC MT2A
REC MT1B
REC MT2B
ME/-MP
-FE ON
RP GND
SP/-LP
RP PB
REC ATF
VCC
-1/2 SWP
RF SWP
RP 4.9V
PB RF
LANC SIG
LANC DC
CAP FG
⑤ TO VC-134 BOARD (3/4) (SS/FD BLOCK)
(See Page 85)
CN001 14P (A-3)
(CHECK PIN)
PB RF OUT 14
RP GND 13
PB RF CH2 12
PB RF CH1 11
1/2 RF SWP 10
RF SWP 9
REC 2A 8
REC 1A 7
REC 2B 6
REC 1B 5
CAP FG 4
RP GND 3
LANC DC 2
LANC SIG 1
⑥ TO VC-134 BOARD (4/4) (AU/IO BLOCK)
PB RF
REC AFM
FSC
(See Page 89)
⑦ TO VC-134 BOARD (4/4) (AU/IO BLOCK)
1A MT
2B MT
1B MT
2A MT
C CONT
Y CONT
MF CONT
(See Page 90)
THRU
VJ I/O
JK INS
AV IN
VJ GND
-VTR SCK
-CS VTR
VTR SO
⑧ TO VC-134 BOARD (3/4) (SS/FD BLOCK)
(See Page 86, 87)
B 4.9V
COMP REC
VCC
RF SWP
JOG
VTR SYNC
SP/-LP
GND
V MUTE
JOG VD
VA PB
VI IN/-OUT
⑨ TO VC-134 BOARD (3/4) (SS/FD BLOCK)
(See Page 84, 85)
VTR SYNC
REGH
FSC
② TO VC-134 BOARD (1/4) (CA BLOCK)
(See Page 78)
SYNC AGC
C COMB
IR
CAR
DEV
PB Y
EMPH
⑩ TO VC-134 BOARD (4/4) (AU/IO BLOCK)
(See Page 90)
S-C OUT
S-Y OUT
REC C
REC Y
VIDEO IN
⑪ TO VC-134 BOARD (4/4) (AU/IO BLOCK)
(See Page 90)

VC-134 BOARD (3/4) (SS/FD BLOCK)



- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡》	➡
PB			⇨》	⇨

	REC	REC/PB	PB
Drum speed servo		▻	
Drum phase servo		▻》	
Drum servo (speed and phase)		▻》》	
Capstan speed servo			
Capstan phase servo	➤》	▻》	▻》
Capstan servo (speed and phase)		▻》》	
Ref. signal	➤	▻	▻

VC-134 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

- Refer to page 68 to 73 for Printed Wiring Board.

— Ref. No. VC-134 BOARD: 1000 series —

VC-134 BOARD (3/4)
(SS/FD BLOCK)
(See Page 78)
④ TO VC-134 BOARD (1/4) (CA BLOCK)
(See Page 90)
⑫ TO VC-134 BOARD (4/4) (AU/IO BLOCK)
(See Page 83)
⑨ TO VC-134 BOARD (2/4) (RP/SR BLOCK)
(See Page 89)
⑬ TO VC-134 BOARD (4/4) (AU/IO BLOCK)
(See Page 79)
⑤ TO VC-134 BOARD (2/4) (RP/SR BLOCK)
IC201 TAPE TOP/END DET. DRUM FG/PG WAVE SHAPER T/S REEL FG AMP. REW DETECT
IC203 SERVO/MECHA CONTROL
IC204 ATF SERVO, SP/LP DETECT, CLOG DETECT
IC206 LOADING MOTOR DRIVE
IC205 SIRCS CONTROL
IC202 DRUM MOTOR DRIVE
IC901 EEP ROM
IC902 BACK UP SWITCH
IC903 MODE CONTROL (MASTER)
IC904 CHARACTER GENERATOR
Q202 CAM 15V/-8V SWITCH
Q201 LED DRIVE (TALLY)
Q902 LED DRIVE (CHARGE)
Q901 5.5V REG
M903 LOADING MOTOR
M902 CAPSTAN MOTOR
M901 DRUM MOTOR
S901 MODE SWITCH
(See Page 115)
(See Page 97)
(See Page 99)
(See Page 89) ⑭
(See Page 92) ⑮
(See Page 83) ⑧
(See Page 78) ①
(See Page 92) ⑯
(See Page 106)
(See Page 97)

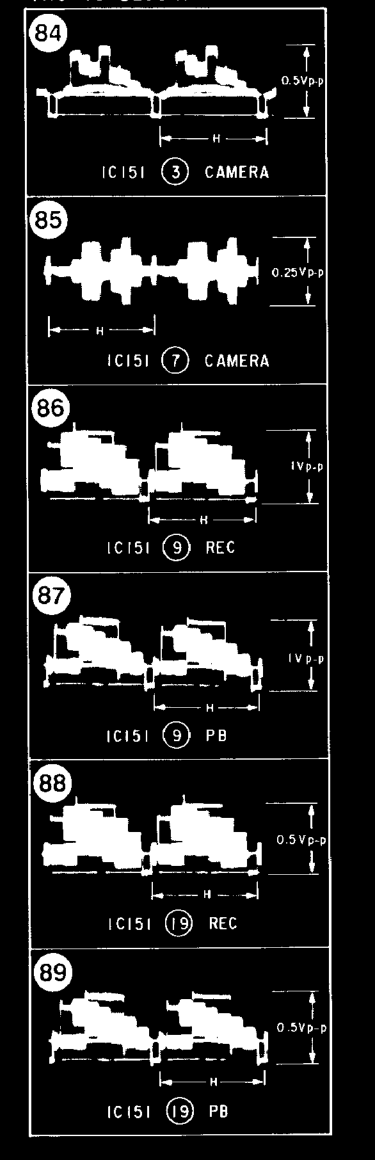
VC-134 (AUDIO) SCHEMATIC DIAGRAM

- Refer to page 68 to 73 for Printed Wiring Board.

— Ref. No. VC-134 BOARD: 1000 series —

VC-134 BOARD (4/4) (AU/IO BLOCK)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Q882 MUTE
Q883, 884 LINE IN SWITCH
Q881 MUTE
Q880 MUTE CONTROL
IC802 INPUT SELECT
Q801 LINE OUT SWITCH
Q885 MUTE
Q800 MUTE
IC800 AFM PROCESS
IC150 EVR (D/A CONVERTER)
Q157, 160 CURRENT LIMITER
Q161 INVERTER
Q155 VIDEO OUT
Q159 Y/C OUT
Q150 BUFFER
Q151 MUTE
Q152, 153 Y/C MIX
Q154 INVERTER, IN/OUT SWITCH
Q158 IN/OUT SWITCH
IC151 CHARACTER MIX
TO VC-134 BOARD (3/4) (SS/FG BLOCK) (See Page 86, 87)
TO VC-134 BOARD (3/4) (SS/FG BLOCK) (See Page 85)
TO VC-134 BOARD (2/4) (RP/SR BLOCK) (See Page 79)
TO VC-134 BOARD (2/4) (RP/SR BLOCK) (See Page 79)
TO VC-134 BOARD (3/4) (SS/FG BLOCK) (See Page 84)
TO VC-134 BOARD (2/4) (RP/SR BLOCK) (See Page 83)
TO VC-134 BOARD (2/4) (RP/SR BLOCK) (See Page 83)
TO VC-134 BOARD (3/4) (SS/FG BLOCK) (See Page 88)
TO VC-134 BOARD (3/4) (SS/FG BLOCK) (See Page 86, 87)
TO EZ-6 BOARD CN550 FP-33 FLEXIBLE (See Page 113)
TO VC-134 BOARD (1/4) (CA BLOCK) (See Page 78)
CHASSIS GND
THRU

VC-134 BOARD (4/4) (AU/IO BLOCK)



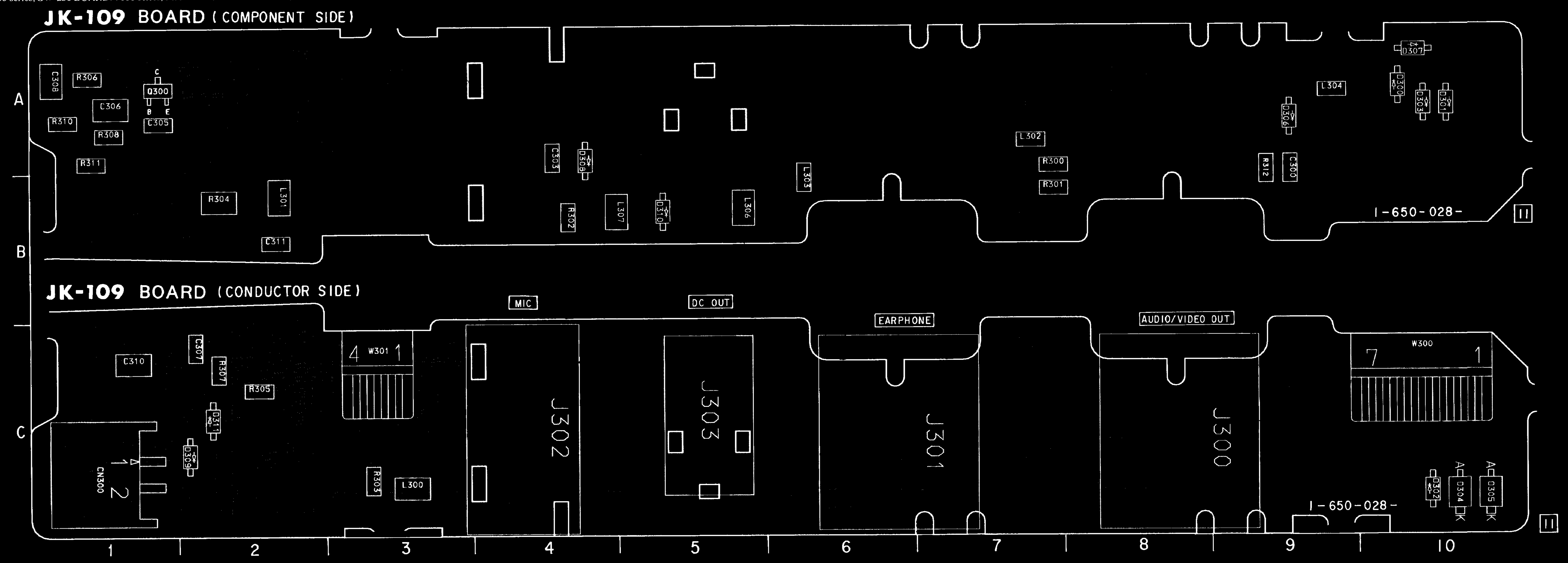
- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	➡
PB	⇨	⇨≫	⇨⋙	⇨

JK-109 (JACK), SW-230 (SWITCH), MA-172 (MIC AMPLIFIER), FP-689 (SWITCH), FK-60 (SWITCH), CF-36 (SWITCH) PRINTED WIRING BOARDS

— Ref. No. JK-109 BOARD: 6000 series, SW-230 BOARD: 7000 series, MA-172 BOARD: 8000 series, FP-689 BOARD: 9000 series —

- FK-60, CF-63 boards are replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

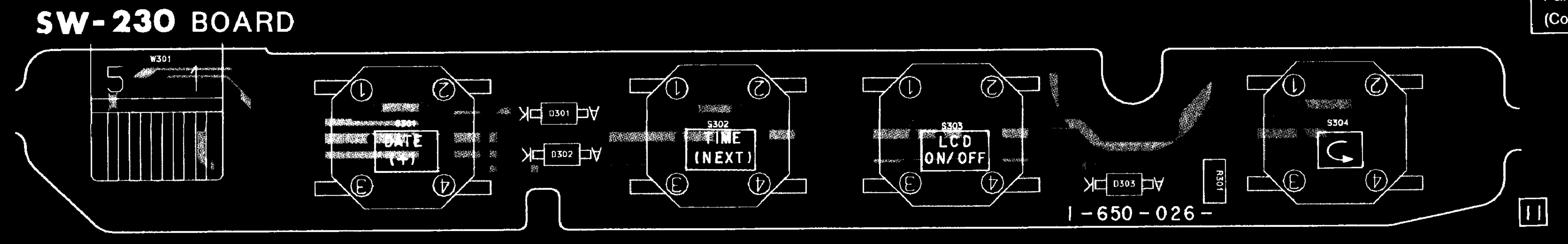

JK-109 BOARD (COMPONENT SIDE)
C308
R306
R310
C306
R308
Q300
C305
R311
R304
L301
C311
C303
D306
R302
L307
D307
L306
L303
L302
R300
R301
R312
C302
D308
L304
D303
1-650-028-
11
JK-109 BOARD (CONDUCTOR SIDE)
MIC
DC OUT
EARPHONE
AUDIO/VIDEO OUT
C310
C307
R307
R305
W301
CN300
R303
L300
J302
J303
J301
J300
W300
D304
D305
1-650-028-
11
A
B
C
1
2
3
4
5
6
7
8
9
10

- **For printed wiring board of JK-109 board.**
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

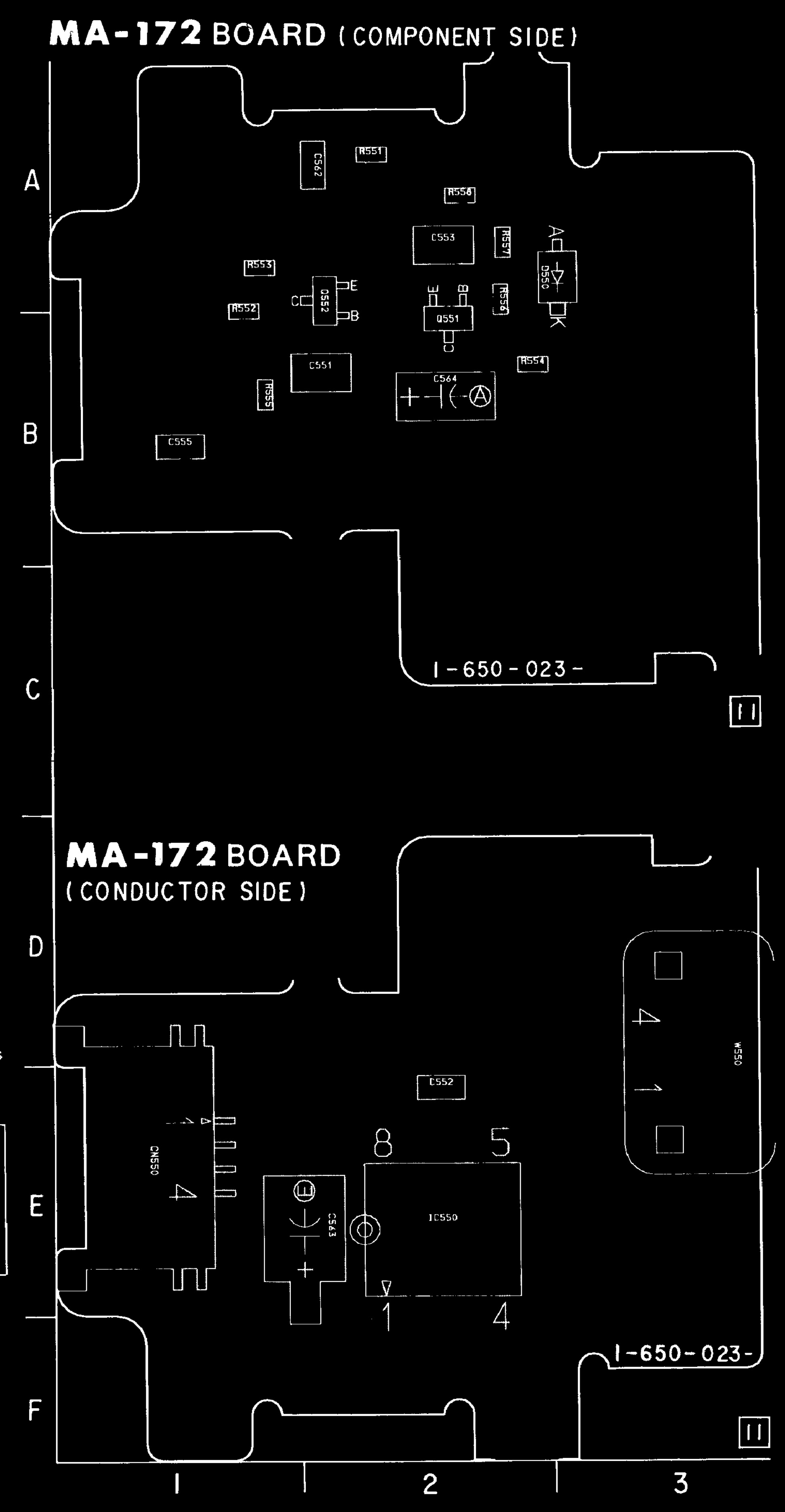
- **For printed wiring board of SW-203 board.**
- SW-230 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- ● : Through hole is omitted.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

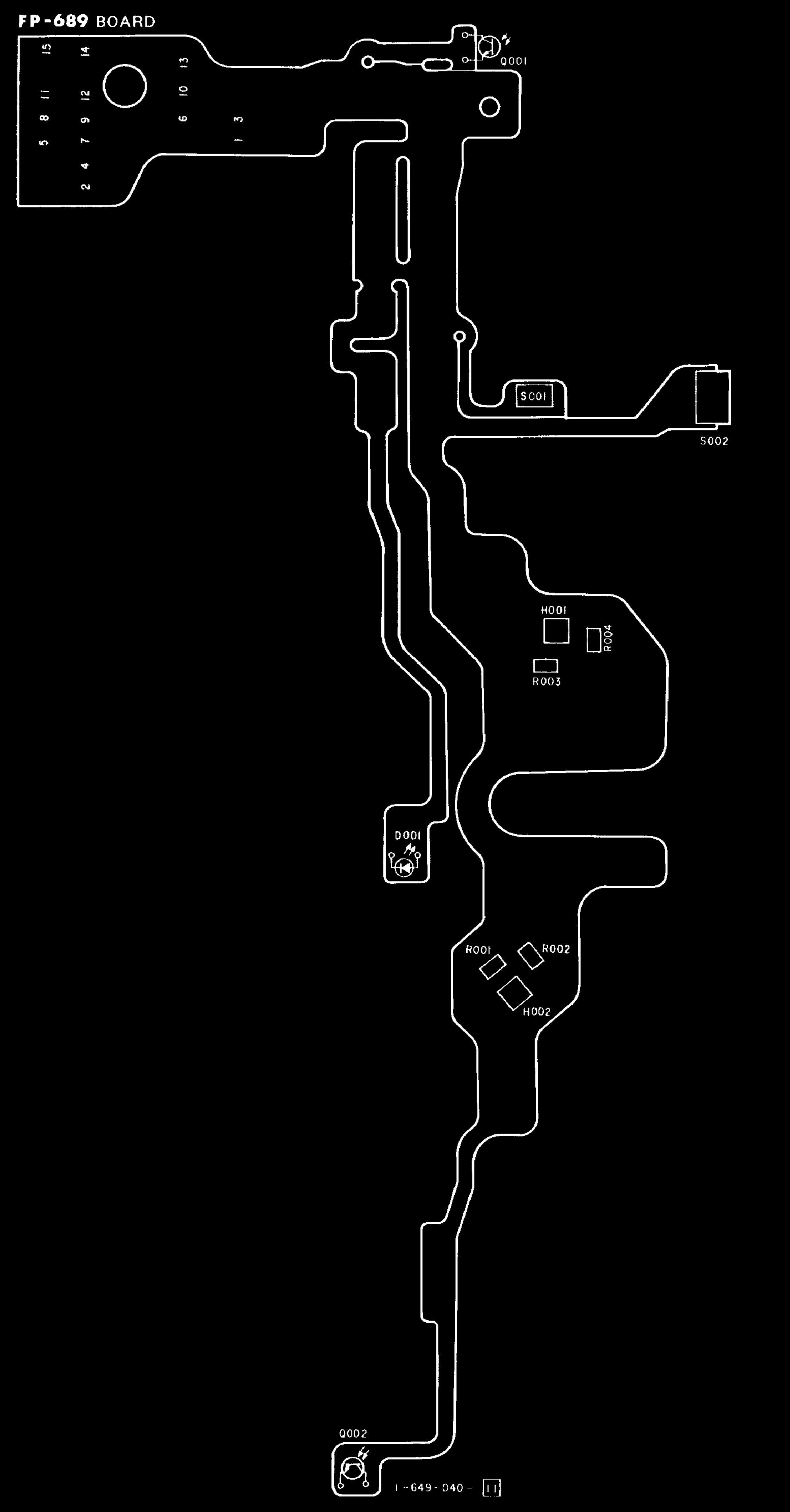
(The other layer's patterns are not indicated.)


SW-230 BOARD
W301
DATE
(+)
D301
D302
TIME
(NEXT)
LCD
ON/OFF
S304
D303
1-650-026-
11

- **For printed wiring boards.**
- MA-172 board is a six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.


MA-172 BOARD (COMPONENT SIDE)
C554
C551
C555
1-650-023-
11
MA-172 BOARD
(CONDUCTOR SIDE)
C552
IC550
8
5
1
4
1-650-023-
11
A
B
C
D
E
F
1
2
3

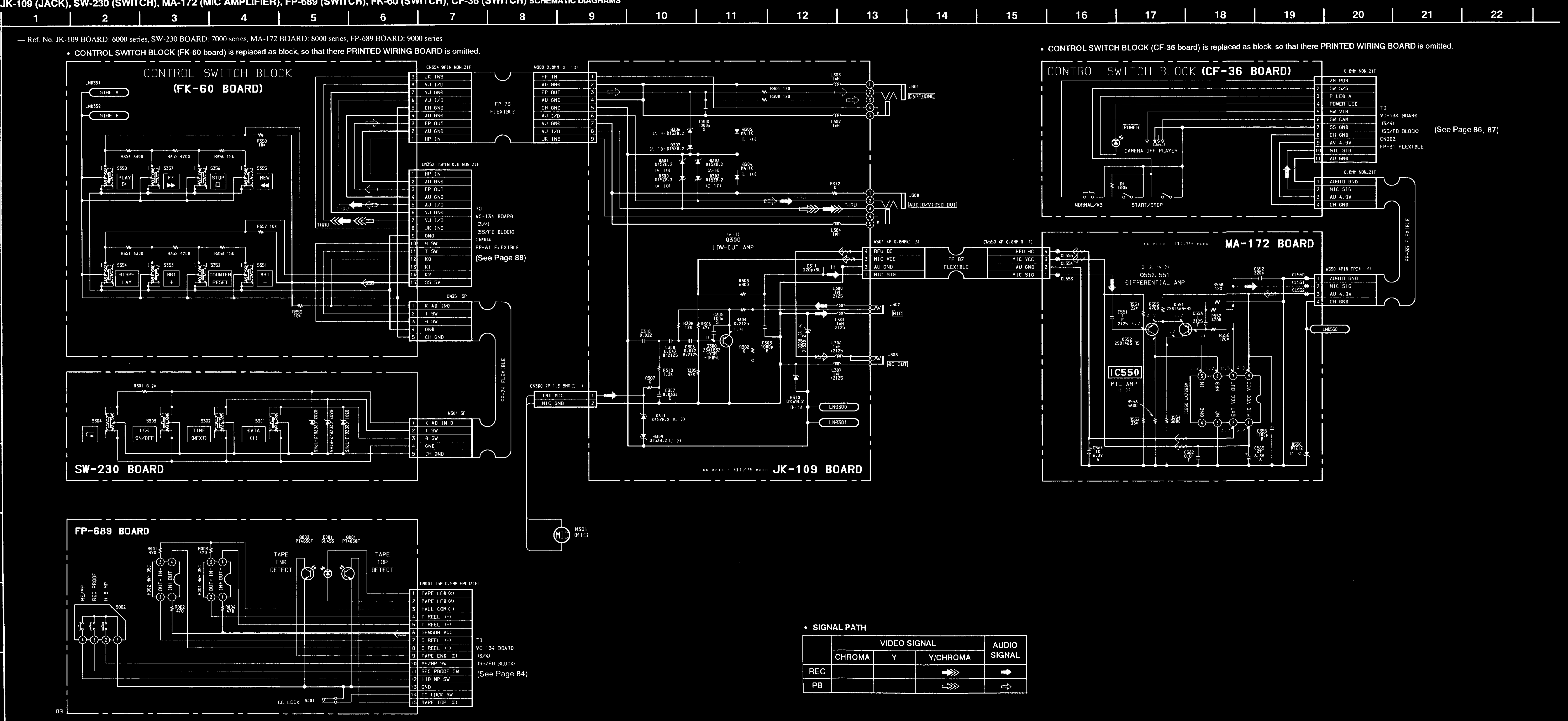

FP-689 BOARD
S001
S002
H001
R003
D001
R001
R002
H002
Q002
1-649-040-
11

JK-109 (JACK), SW-230 (SWITCH), MA-172 (MIC AMPLIFIER), FP-689 (SWITCH), FK-60 (SWITCH), CF-36 (SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. JK-109 BOARD: 6000 series, SW-230 BOARD: 7000 series, MA-172 BOARD: 8000 series, FP-689 BOARD: 9000 series —

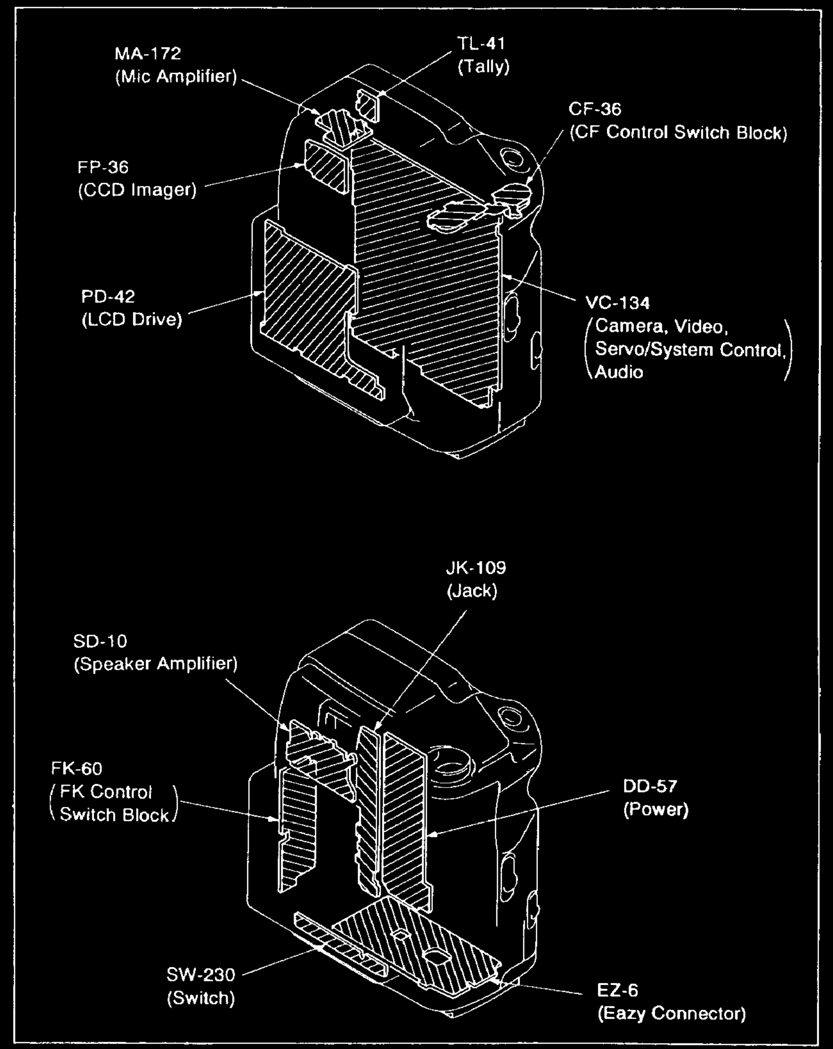
- CONTROL SWITCH BLOCK (FK-60 board) is replaced as block, so that there PRINTED WIRING BOARD is omitted.

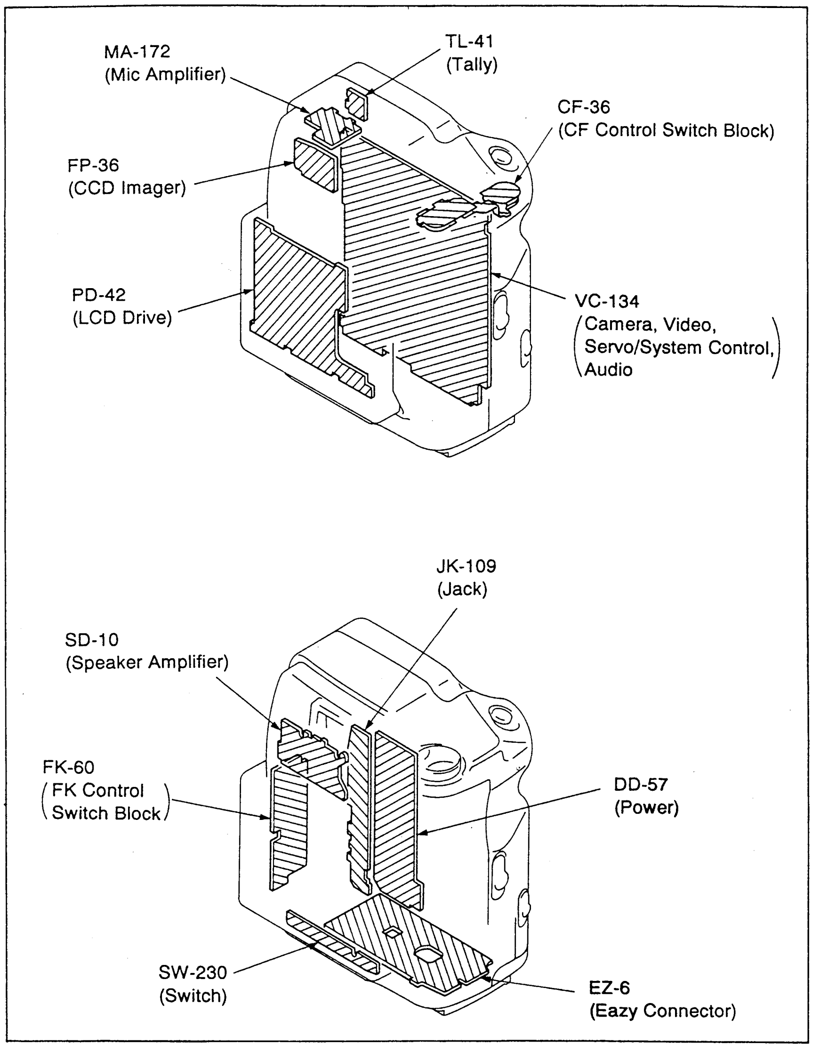
- CONTROL SWITCH BLOCK (CF-36 board) is replaced as block, so that there PRINTED WIRING BOARD is omitted.

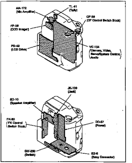

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
A
B
C
D
E
F
G
H
I
J
CONTROL SWITCH BLOCK
(FK-60 BOARD)
PLAY
FF
STOP
REW
DISPLAY
COUNTER RESET
SW-230 BOARD
LCD ON/OFF
TIME (NEXT)
DATA (+)
CN354 9PIN NON_ZIF
W300 0.8MM
FP-73 FLEXIBLE
CN352 15PIN 0.5 NON_ZIF
TO VC-134 BOARD (3/4) (SS/FD BLOCK) CN904 FP-41 FLEXIBLE
(See Page 88)
FP-74 FLEXIBLE
CN300 2P 1.5 SMT
INT MIC
MIC GND
MIC
JK-109 BOARD
EARPHONE
AUDIO/VIDEO OUT
MIC
DC OUT
LOW-CUT AMP
FP-87 FLEXIBLE
MA-172 BOARD
DIFFERENTIAL AMP
IC550
MIC AMP
FP-689 BOARD
TAPE END DETECT
TAPE TOP DETECT
CN801 15P 0.5MM FPC (ZIF)
TAPE LED (A)
TAPE LED (K)
HALL COM (-)
T REEL (+)
T REEL (-)
SENSOR VCC
S REEL (+)
S REEL (-)
TAPE END (C)
ME/MP SW
REC PROOF SW
HI8 MP SW
GND
CC LOCK SW
TAPE TOP (C)
TO VC-134 BOARD (3/4) (SS/FD BLOCK)
(See Page 84)
CC LOCK
CONTROL SWITCH BLOCK (CF-36 BOARD)
0.8MM NON_ZIF
ZM POS
SW S/S
P LED A
POWER LED
SW VTR
SW CAM
SS GND
CH GND
AV 4.9V
MIC SIG
AU GND
TO VC-134 BOARD (3/4) (SS/FD BLOCK) CN902 FP-31 FLEXIBLE
(See Page 86, 87)
POWER
CAMERA OFF PLAYER
NORMAL/X3
START/STOP
AUDIO GND
MIC SIG
AU 4.9V
CH GND
FP-35 FLEXIBLE

- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡≫	➡
PB			⇨≫	⇨


MA-172 (Mic Amplifier)
TL-41 (Tally)
FP-36 (CCD Imager)
CF-36 (CF Control Switch Block)
PD-42 (LCD Drive)
VC-134 (Camera, Video, Servo/System Control, Audio)
JK-109 (Jack)
SD-10 (Speaker Amplifier)
FK-60 (FK Control Switch Block)
DD-57 (Power)
SW-230 (Switch)
EZ-6 (Eazy Connector)


MA-172
(Mic Amplifier)
TL-41
(Tally)
CF-36
(CF Control Switch Block)
FP-36
(CCD Imager)
PD-42
(LCD Drive)
VC-134
(Camera, Video, Servo/System Control, Audio)
JK-109
(Jack)
SD-10
(Speaker Amplifier)
FK-60
(FK Control Switch Block)
DD-57
(Power)
SW-230
(Switch)
EZ-6
(Eazy Connector)


MA-172
(Mic Amplifier)
TL-41
(Tally)
CF-38
(CF Control Switch Block)
FP-38
(CCD Imager)
PD-42
(LCD Drive)
VC-134
(Camera, Video, Servo/System Control, Audio)
JK-109
(Jack)
SO-10
(Speaker Amplifier)
FK-80
(FK Control Switch Block)
DD-67
(Power)
SW-230
(Switch)
EZ-6
(Easy Connector)

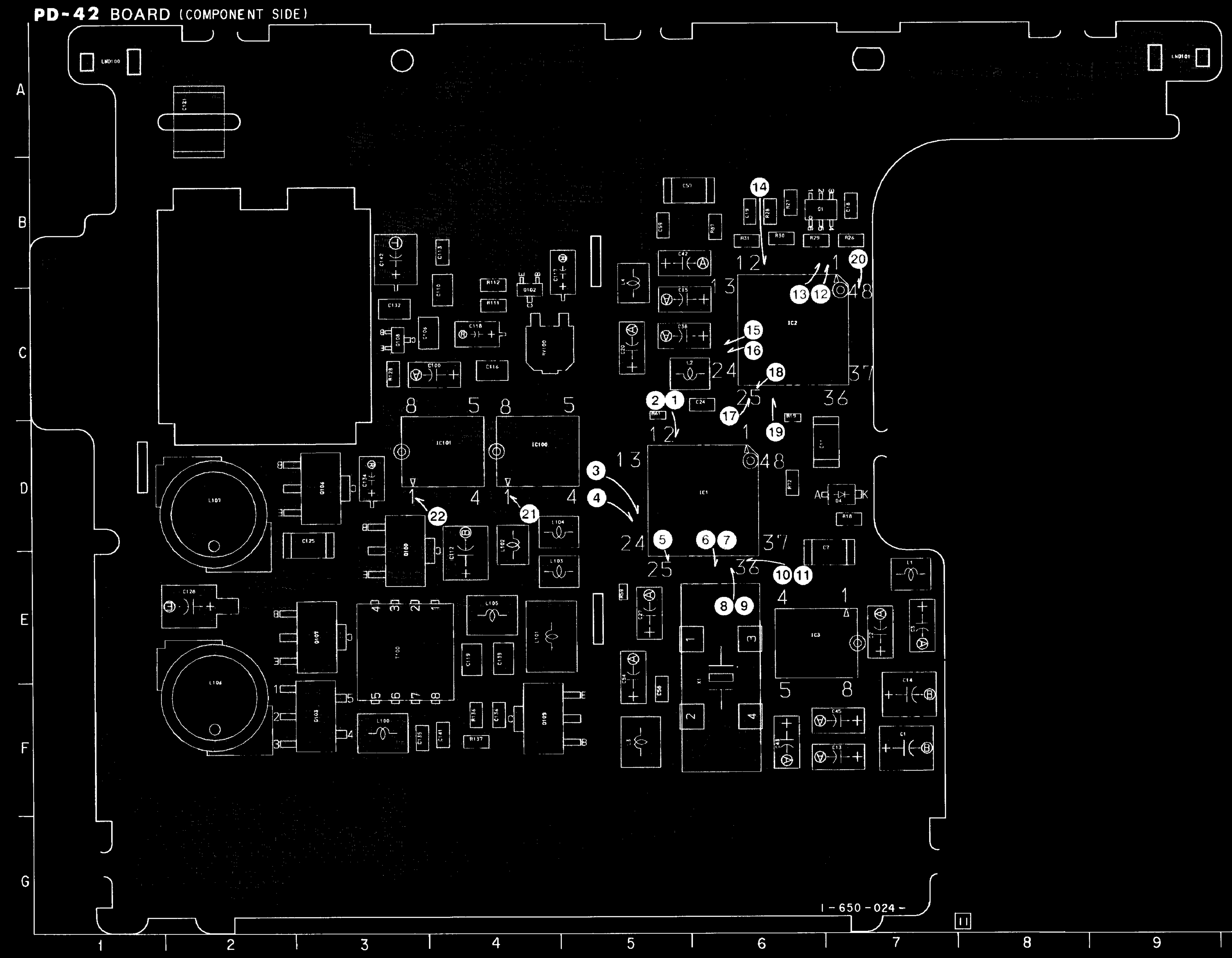
SD-10 (SPEAKER AMPLIFIER), PD-42 (LCD DRIVE) PRINTED WIRING BOARDS

— Ref. No. SD-10, PD-42 BOARDS: 2000 series —

- **For printed wiring boards.**
- SD-10, PD-42 boards are a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- ● : Through hole is omitted.

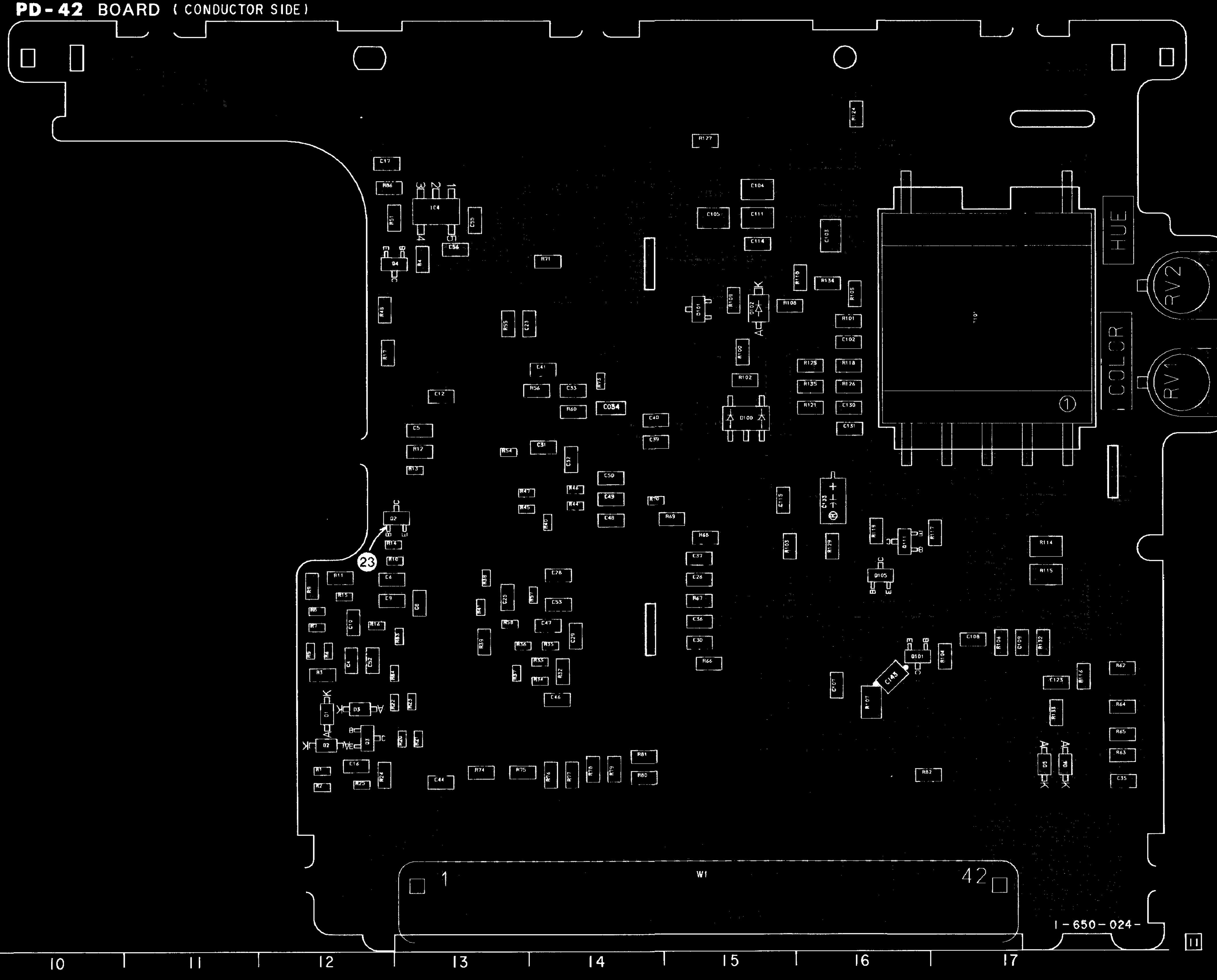
Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

PD-42 BOARD (COMPONENT SIDE)



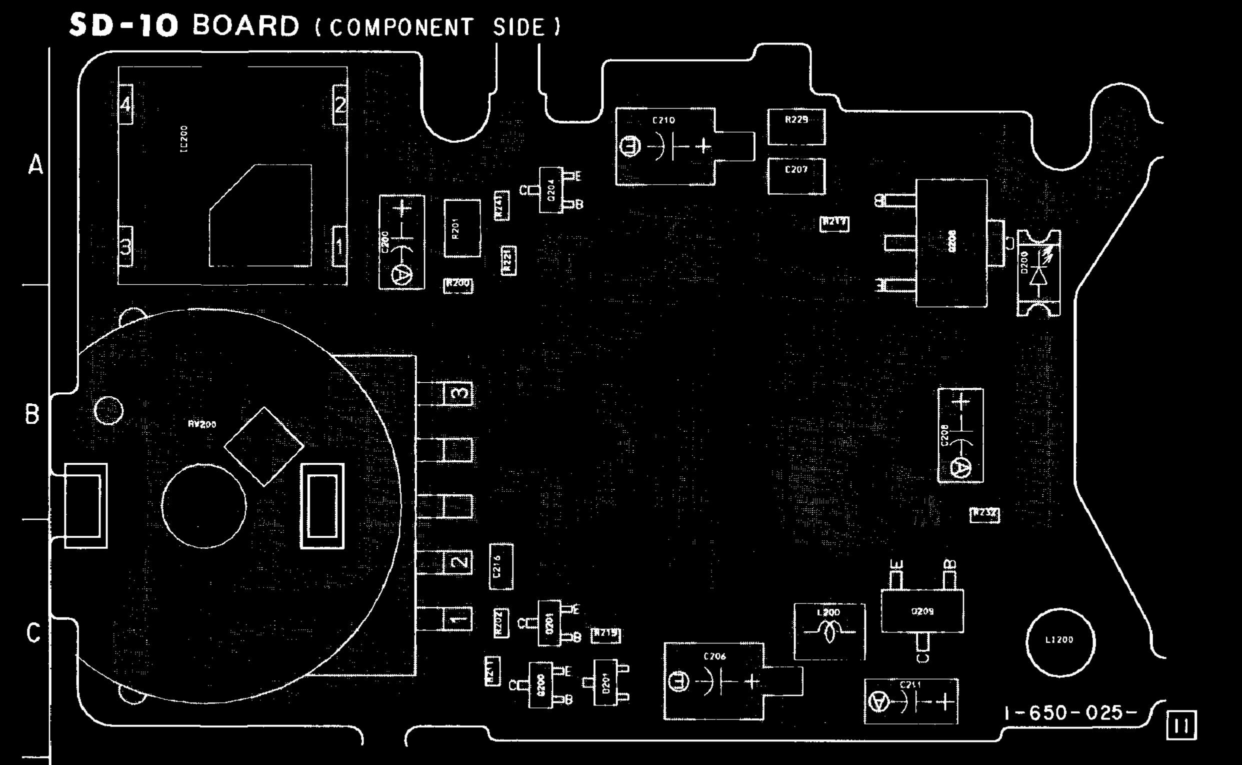
A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9
1-650-024-
11

PD-42 BOARD (CONDUCTOR SIDE)



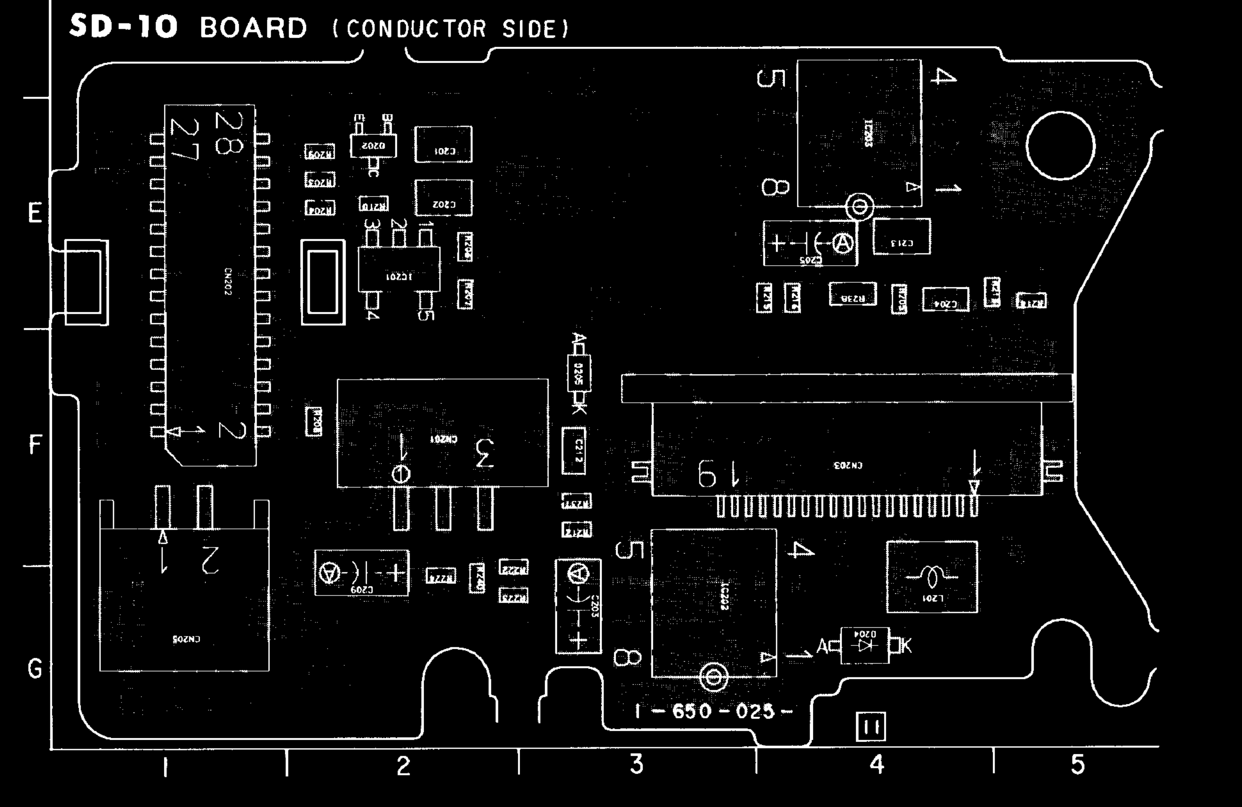
HUE
COLOR
RV2
RV1
W1
1
42
10
11
12
13
14
15
16
17
1-650-024-
11

SD-10 BOARD (COMPONENT SIDE)

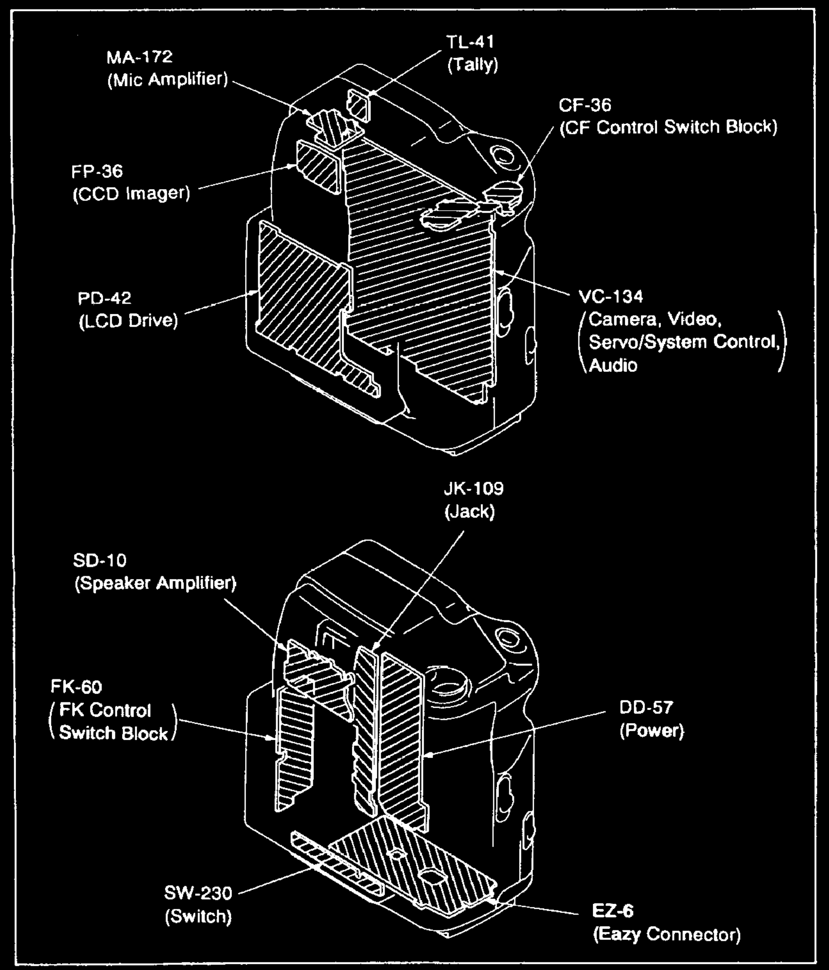


A
B
C
1-650-025-
11

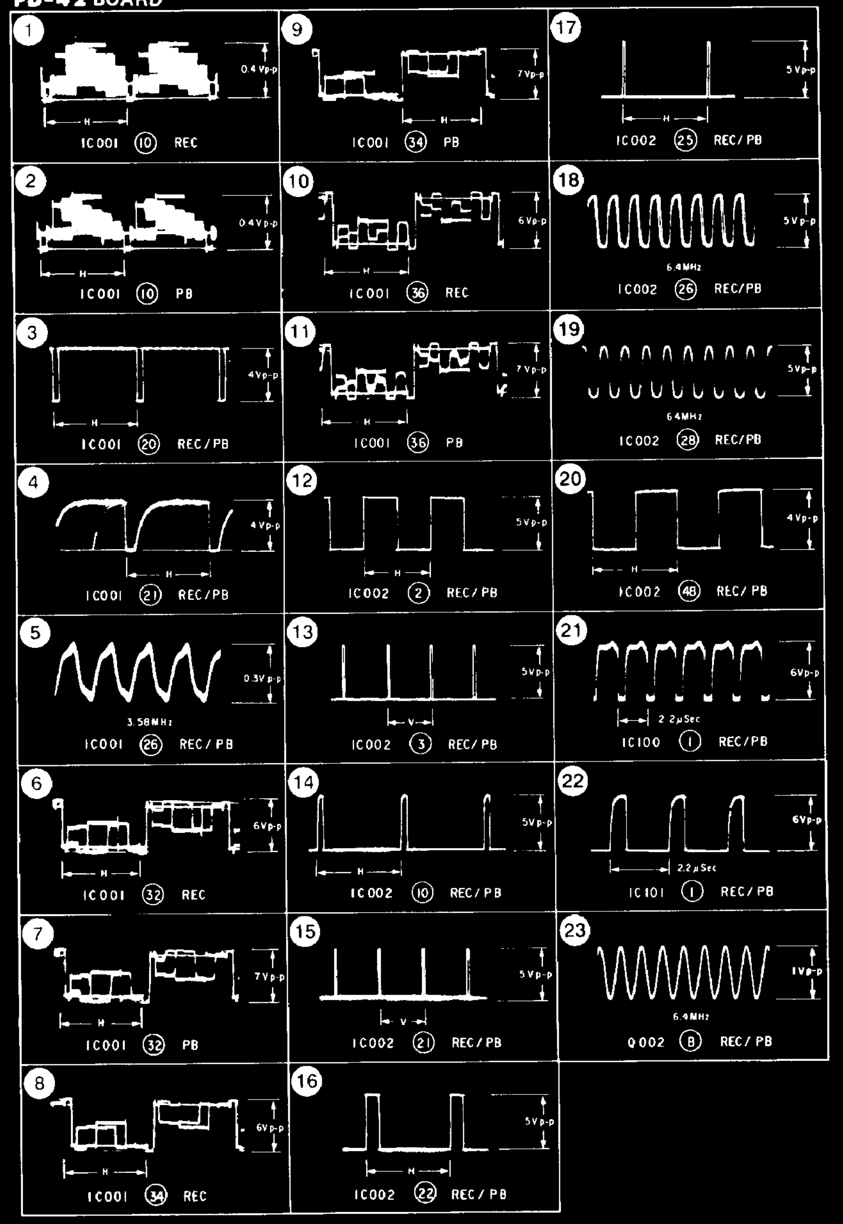
SD-10 BOARD (CONDUCTOR SIDE)



D
E
F
G
1
2
3
4
5
1-650-025-
11

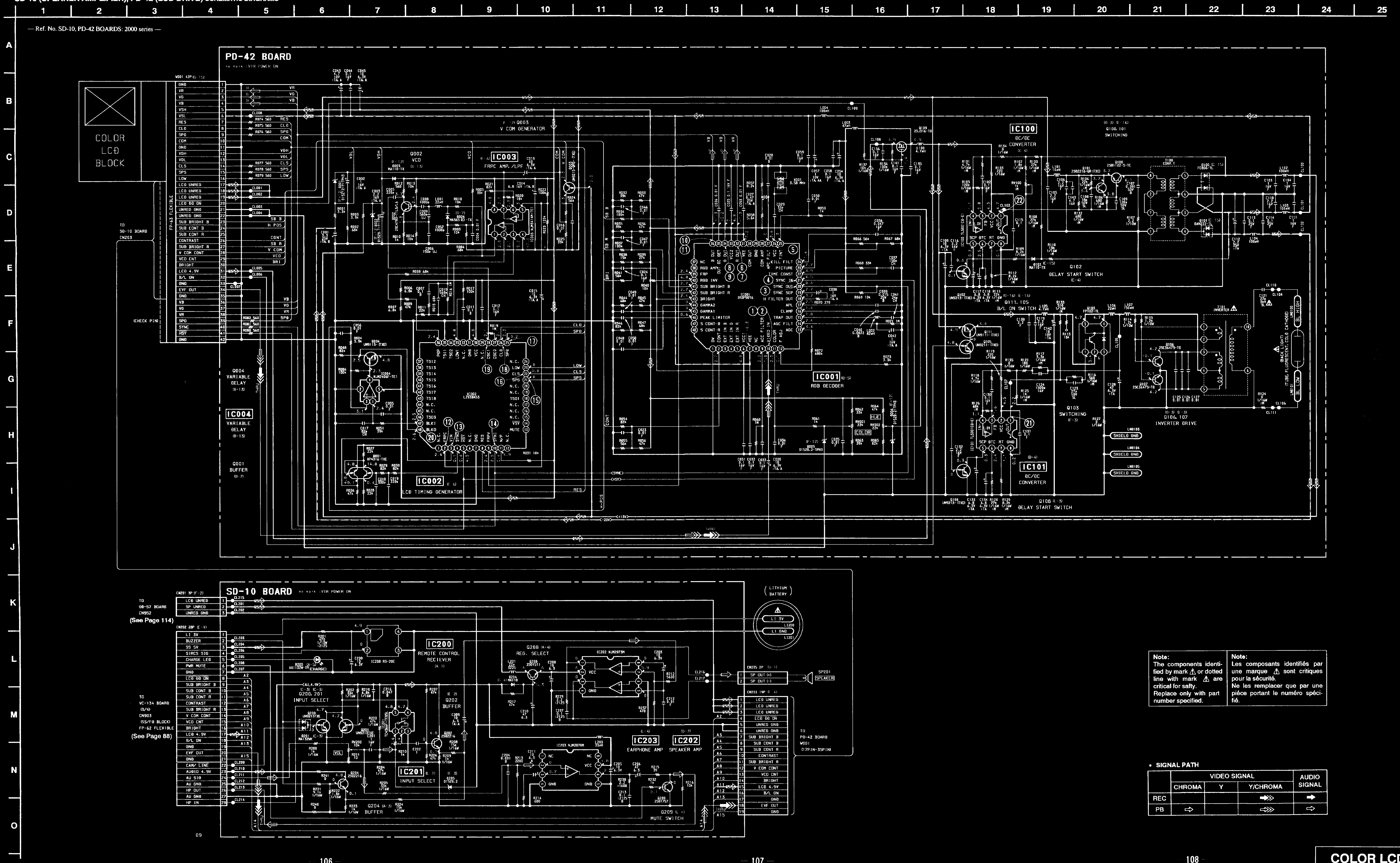

MA-172
(Mic Amplifier)
TL-41
(Tally)
CF-36
(CF Control Switch Block)
FP-36
(CCD Imager)
PD-42
(LCD Drive)
VC-134
(Camera, Video, Servo/System Control, Audio)
JK-109
(Jack)
SD-10
(Speaker Amplifier)
FK-60
(FK Control Switch Block)
DD-57
(Power)
SW-230
(Switch)
EZ-6
(Eazy Connector)

PD-42 BOARD



SD-10 (SPEAKER AMPLIFIER), PD-42 (LCD DRIVE) SCHEMATIC DIAGRAMS

— Ref. No. SD-10, PD-42 BOARDS: 2000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
PD-42 BOARD
COLOR LCD BLOCK
TO SD-10 BOARD CN203
(CHECK PIN)
Q003 V COM GENERATOR
Q002 VCO
IC003 FRPC AMP, /LPF
Q004 VARIABLE DELAY
IC004 VARIABLE DELAY
Q001 BUFFER
IC002 LCD TIMING GENERATOR
IC001 RGB DECODER
IC100 DC/DC CONVERTER
Q100, 101 SWITCHING
Q102 DELAY START SWITCH
Q111, 105 B/L ON SWITCH
Q103 SWITCHING
Q106, 107 INVERTER DRIVE
IC101 DC/DC CONVERTER
Q108 DELAY START SWITCH
SHIELD GND
SD-10 BOARD
TO DD-57 BOARD CN952
(See Page 114)
TO VC-134 BOARD (3/4) CN903 (SS/FO BLOCK) FP-62 FLEXIBLE
(See Page 88)
(LITHIUM BATTERY)
IC200 REMOTE CONTROL RECIEVER
Q208 REG. SELECT
Q200, 201 INPUT SELECT
Q202 BUFFER
IC201 INPUT SELECT
Q204 BUFFER
IC203 EARPHONE AMP
IC202 SPEAKER AMP
Q209 MUTE SWITCH
SP201 SPEAKER
TO PD-42 BOARD W001 (12PIN-35PIN)

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡≫	➡
PB	⇨		⇨≫	⇨

DD-57 (POWER), EZ-6 (EAZY CONNECTOR) PRINTED WIRING BOARDS

— Ref. No. DD-57, EZ-6 BOARDS: 3000 series —

- **For printed wiring board of EZ-6 board.**
- ● : Through hole is omitted.

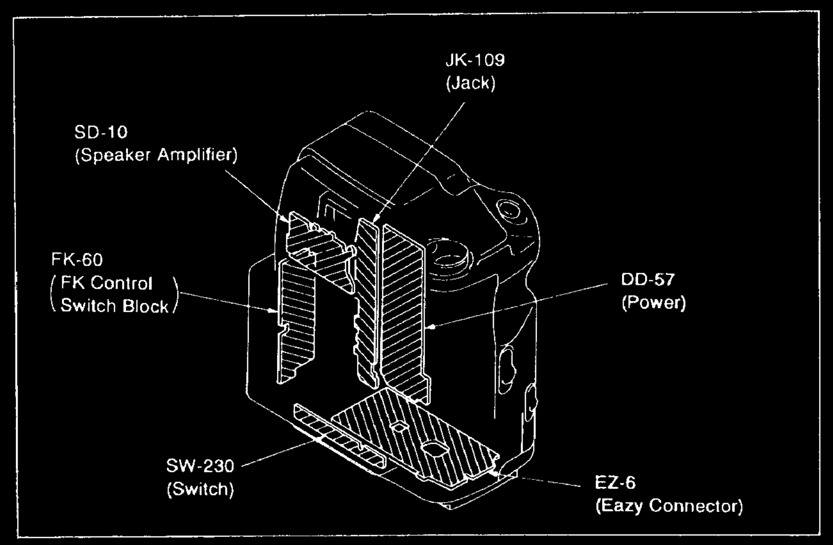
Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

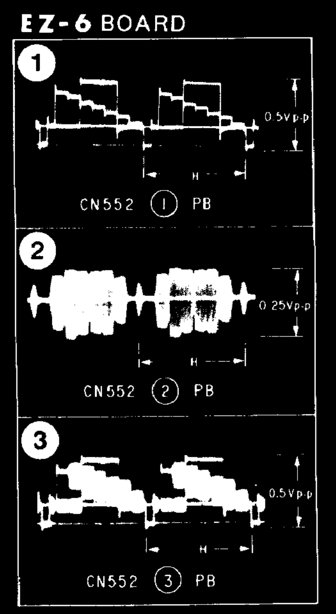
- **For printed wiring boards.**
- DD-57 board is a six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.
- ● : Through hole is omitted.

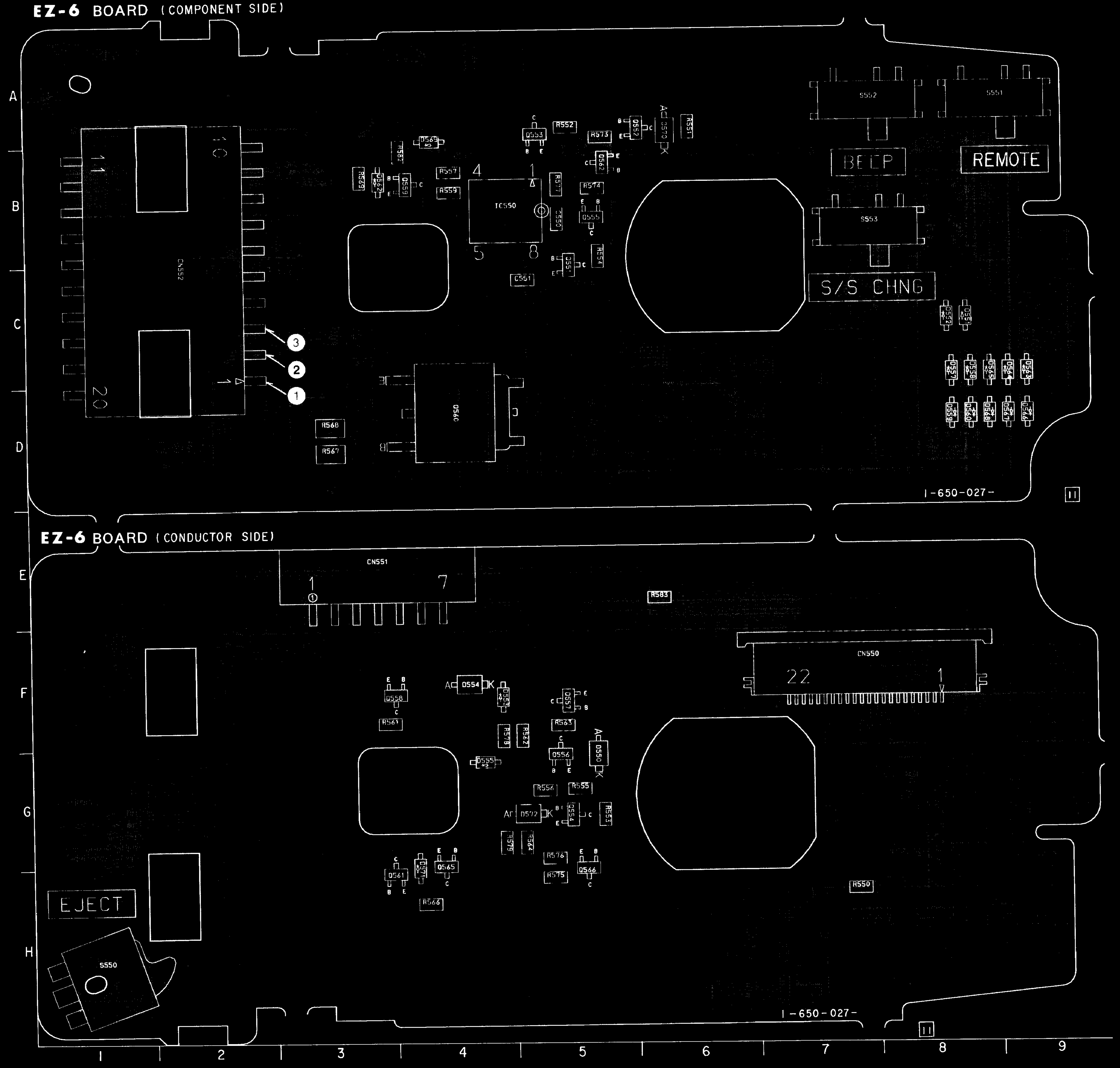
Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.


JK-109
(Jack)
SD-10
(Speaker Amplifier)
FK-60
(FK Control Switch Block)
DD-57
(Power)
SW-230
(Switch)
EZ-6
(Eazy Connector)

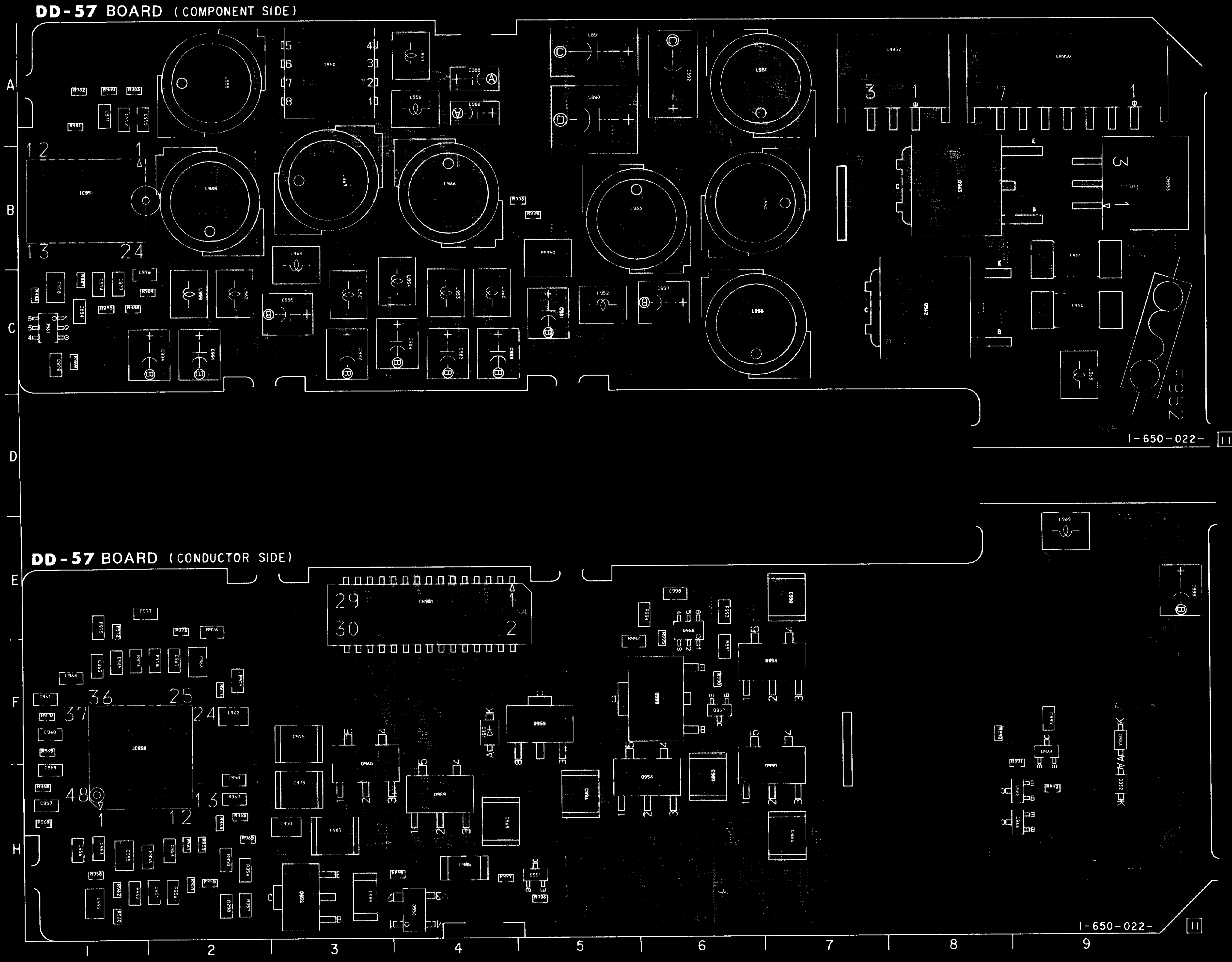
EZ-6 BOARD




EZ-6 BOARD (COMPONENT SIDE)

EZ-6 BOARD (CONDUCTOR SIDE)

A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
S552
S551
BEEP
REMOTE
S553
S/S CHNG
IC550
CN552
1-650-027-
CN551
CN550
22
1
EJECT
S550
1-650-027-


DD-57 BOARD (COMPONENT SIDE)

DD-57 BOARD (CONDUCTOR SIDE)

A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
1-650-022-
CN551
29
1
30
2
IC950
36
25
37
24
48
13
1
12
1-650-022-

DD-57 (POWER), EZ-6 (EAZY CONNECTOR) SCHEMATIC DIAGRAMS

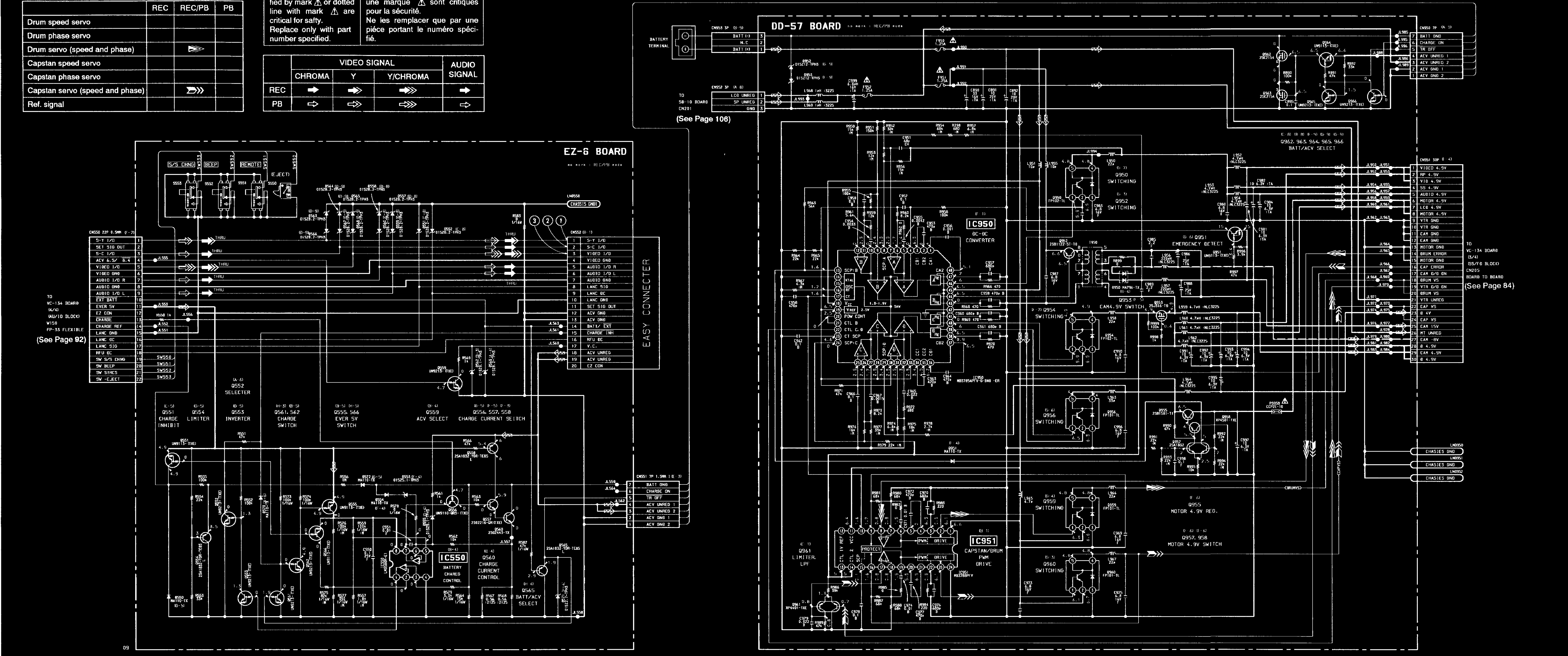
— Ref. No. DD-57, EZ-6 BOARDS: 3000 series —

- **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		⇨≫	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		⇨›››	
Ref. signal			

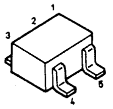
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡≫≫	➡
PB	⇨	⇨≫	⇨≫≫	⇨

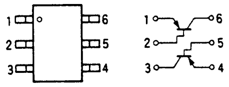

EZ-6 BOARD
EASY CONNECTER
DD-57 BOARD
BATTERY TERMINAL
CN953 3P (B-9)
BATT (-)
N.C
BATT (+)
CN952 3P (A-8)
LCD UNREG
SP UNREG
GND
TO SB-10 BOARD CN201
(See Page 106)
TO VC-134 BOARD (4/4) (AU/IO BLOCK) W150 FP-33 FLEXIBLE
(See Page 92)
CN550 22P 0.5MM
S-C I/O
ACV 6.5/ 8.4
VIDEO I/O
VIDEO GND
AUDIO I/O R
AUDIO GND
AUDIO I/O L
EXT BATT
EVER 5V
EZ CON
CHARGE
CHARGE REF
LANC GND
LANC DC
LANC SIG
RFU DC
SW S/S CHNG
SW BEEP
SW SIRCS
SW -EJECT
S/S CHNG
BEEP
REMOTE
EJECT
Q552 SELECTER
Q551 CHARGE INHIBIT
Q554 LIMITER
Q553 INVERTER
Q561, 562 CHARGE SWITCH
Q555, 566 EVER 5V SWITCH
Q559 ACV SELECT
Q556, 557, 558 CHARGE CURRENT SEITCH
IC550 BATTERY CHARGE CONTROL
Q560 CHARGE CURRENT CONTROL
Q565 BATT/ACV SELECT
CN551 7P
BATT GND
CHARGE ON
TR OFF
ACV UNREG 1
ACV UNREG 2
ACV GND 1
ACV GND 2
IC950 DC-DC CONVERTER
Q950 SWITCHING
Q952 SWITCHING
Q951 EMERGENCY DETECT
Q953 CAM4.9V SWITCH
Q954 SWITCHING
Q956 SWITCHING
Q962, 963, 964, 965, 966 BATT/ACV SELECT
Q955 MOTOR 4.9V REG.
Q957, 958 MOTOR 4.9V SWITCH
IC951 CAPSTAN/DRUM PWM DRIVE
Q959 SWITCHING
Q960 SWITCHING
Q961 LIMITER, LPF
CN954 7P
CN951 30P
VIDEO 4.9V
RP 4.9V
VID 4.9V
SS 4.9V
AUDIO 4.9V
MOTOR 4.9V
LCD 4.9V
VTR GND
CAM GND
MOTOR GND
DRUM ERROR
CAP ERROR
CAM D/D ON
DRUM VS
VTR D/D ON
VTR UNREG
CAP VS
CAM 15V
MT UNREG
CAM -8V
CAM 4.9V
TO VC-134 BOARD (3/4) (SS/FO BLOCK) CN205 BOARD TO BOARD
(See Page 84)
CHASIES GND

4-3. SEMICONDUCTORS

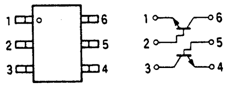
FP101
FP102



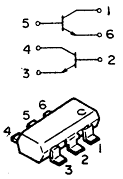
XP4113
XP4401


1
2
3
6
5
4
1
2
3
6
5
4

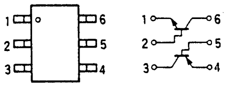
XP4212
XP6215


1
2
3
6
5
4
1
2
3
6
5
4

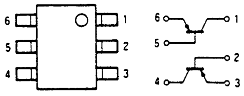
XP4213


5
4
3
1
6
2
6
5
4
1
2
3

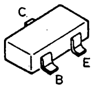
XP4312
XP4601


1
2
3
6
5
4
1
2
3
6
5
4

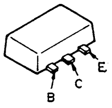
XP4316
XP4501


6
5
4
1
2
3
6
5
4
1
2
3

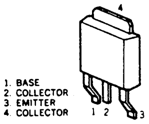
UN9111
UN9113
UN9210
UN9211
UN9213
UN9215
2SA1745
2SB1219
2SB1295
2SB1462
2SB1463
2SB798
2SC4178
2SC4617
2SC4627
2SC4783
2SC4997
2SD2216



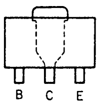
2SB1122
2SC3647
2SJ316



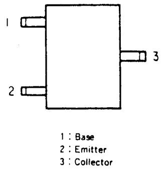
2SB1581


4
1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR
1
2
3

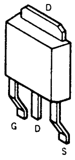
2SD1511



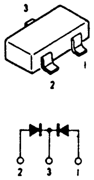
2SD1757K


1
2
3
1 : Base
2 : Emitter
3 : Collector

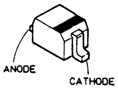
2SK2154



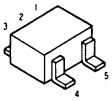
DAN222



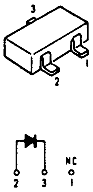
DTZ12
MA110
MA365
1SS352
1SS368


ANODE
CATHODE

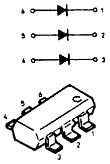
FC806



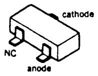
MA132WK



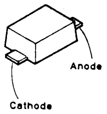
MA6S121


6
5
4
1
2
3
6
5
4
1
2
3

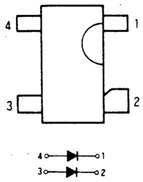
MA720


cathode
NC
anode

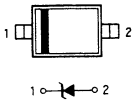
MA728


Anode
Cathode

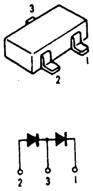
MA796



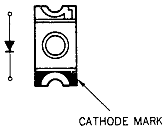
015Z12
015Z2.7
015Z5.1
015Z8.2
015Z9.1



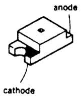
1SS226



AA1102W


CATHODE MARK

BR1102W


anode
cathode

4-3. SEMICONDUCTORS

FP101
FP102

XP4113
XP4401

XP4212
XP6215

XP4213

XP4312
XP4501

XP4316
XP4601

UN2111
UN2113
UN2210
UN2211
UN2213
UN2215
2SA1745
2SB1219
2SB1295
2SB1462
2SB1463
2SB766
2SC4176
2SC4617
2SC4627
2SC4783
2SC4997
2SD2216

2SB1122
2SC3647
2SJ316

2SB1591

2SD1511

2SD1757K

2SK2154

DAN222

DTZ12
MA110
MA365
1SS352
1SS355

FC508

MA132WK

MA6S121

MA720

MA728

MA799

015Z12
015Z2.7
015Z5.1
015Z8.2
015Z9.1

1SS226

AA1102W

CATHODE MARK

SR1102W

SECTION 5
EXPLODED VIEWS

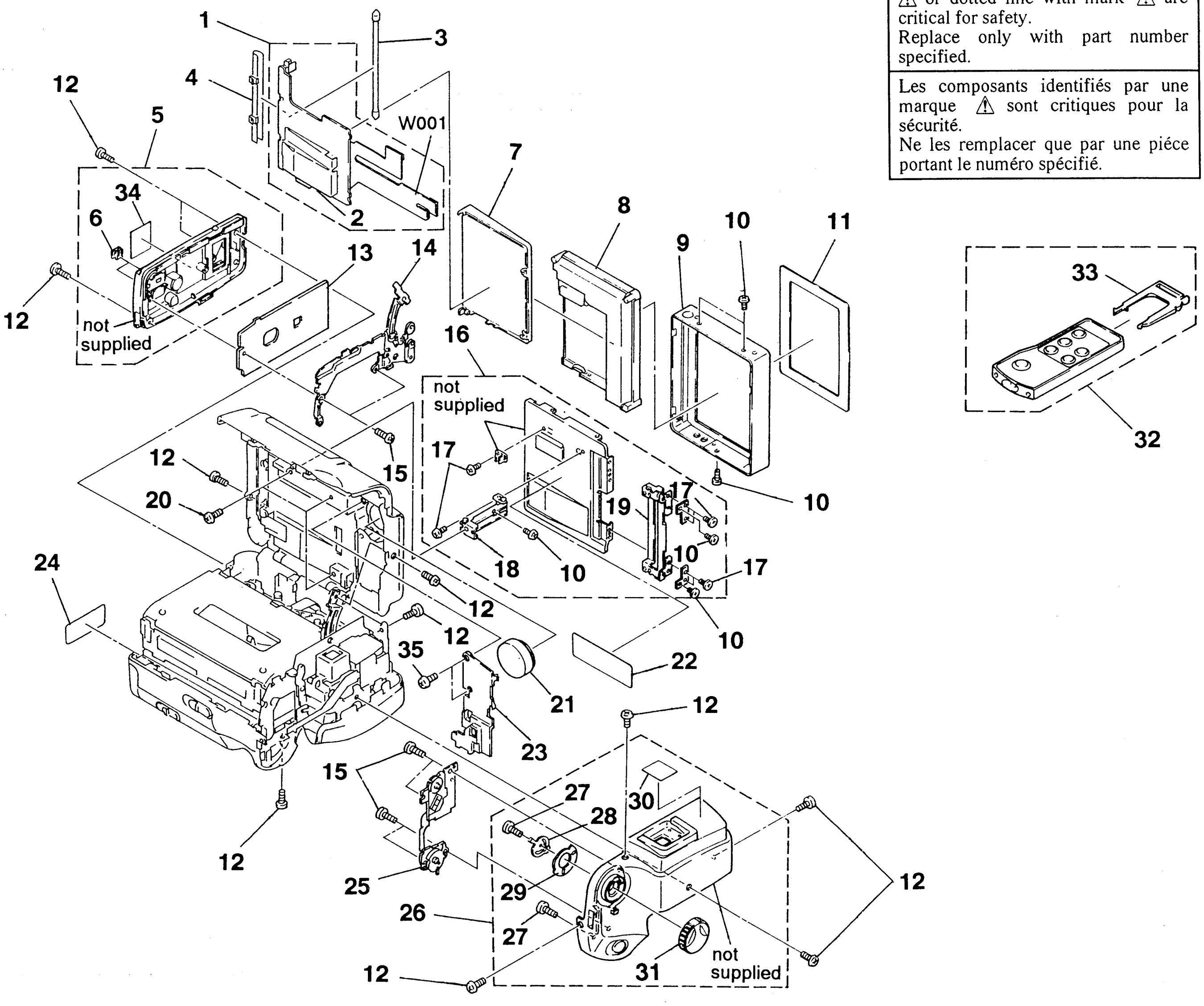
NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

5-1. CABINET (UPPER/BOTTOM) AND PANEL ASSEMBLIES

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.



Ref. No.	Part No.	Description	Remark
1	A-7053-791-A	PD-42 BOARD, COMPLETE	
* 2	X-3943-652-1	CASE, SHIELD (L1) ASSY	
⚠3	1-517-245-11	TUBE, FLUORESCENT, COLD CATHODE	
* 4	3-956-282-01	REFLECTOR	
5	X-3943-458-1	CABINET (BOTTOM) ASSY	
6	3-946-251-01	BUTTON, ON/OFF	
7	1-467-479-11	PLATE, LIGHT GUIDE BLOCK	
8	1-810-328-11	DISPLAY MODULE, LIQUID CRYSTAL	
9	X-3943-588-1	CASE (UPPER) ASSY	
10	3-704-197-22	SCREW (M1.4X2.5), LOCKING	
11	3-956-152-01	PLATE, ORNAMENTAL	
12	3-719-381-01	SCREW (M2X4)	
13	A-7071-919-A	EZ-6 BOARD, COMPLETE	
14	X-3943-396-1	FRAME (LOWER) ASSY	
15	3-948-339-01	SCREW (BTP)(2X5), HEAD	
16	X-3943-399-2	CASE (REAR) ASSY	
17	3-957-684-01	SCREW (M1.4), SPECIAL HEAD	
18	X-3943-397-1	TILT ASSY	
19	X-3943-395-1	HINGE ASSY	
20	3-364-112-21	NILOCK (B)(M2)	
*⚠21	1-528-476-11	BATTERY, LITHIUM (CR2477)	
* 22	3-703-845-01	LABEL (N)(U/C), MAIN CAUTION (US, CND)	
23	X-3943-407-1	COVER ASSY, LITHIUM	
* 24	3-956-707-01	LABEL, MODEL NUMBER (U)(US, CND)	
* 24	3-957-678-01	LABEL, MODEL NUMBER (E32)(E)	
25	1-467-374-11	SWITCH BLOCK, CONTROL (CF-36 BOARD)	
26	X-3943-456-1	CABINET (UPPER) ASSY	
27	3-719-601-01	SCREW (B2X5), TAPPING	
* 28	3-956-170-01	SPRING, D LEAF	
* 29	3-956-131-01	PLATE, CLICK, D	
30	3-703-710-41	STICKER, SONY SYMBOL (12)	
31	3-956-172-11	RING, POWER	
32	1-467-429-21	REMOTE COMMANDER (CAM CODER)(RMT-705)	
33	3-708-412-01	COVER BATTERY, REMOCON	
* 34	3-704-367-01	LABEL (US)	
35	3-719-408-11	SCREW (B2), TAPPING, P3 (2X6)	
W001	1-650-016-11	FP-63 FLEXIBLE BOARD	

SECTION 5

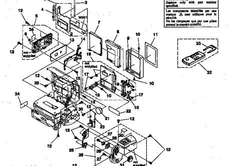
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

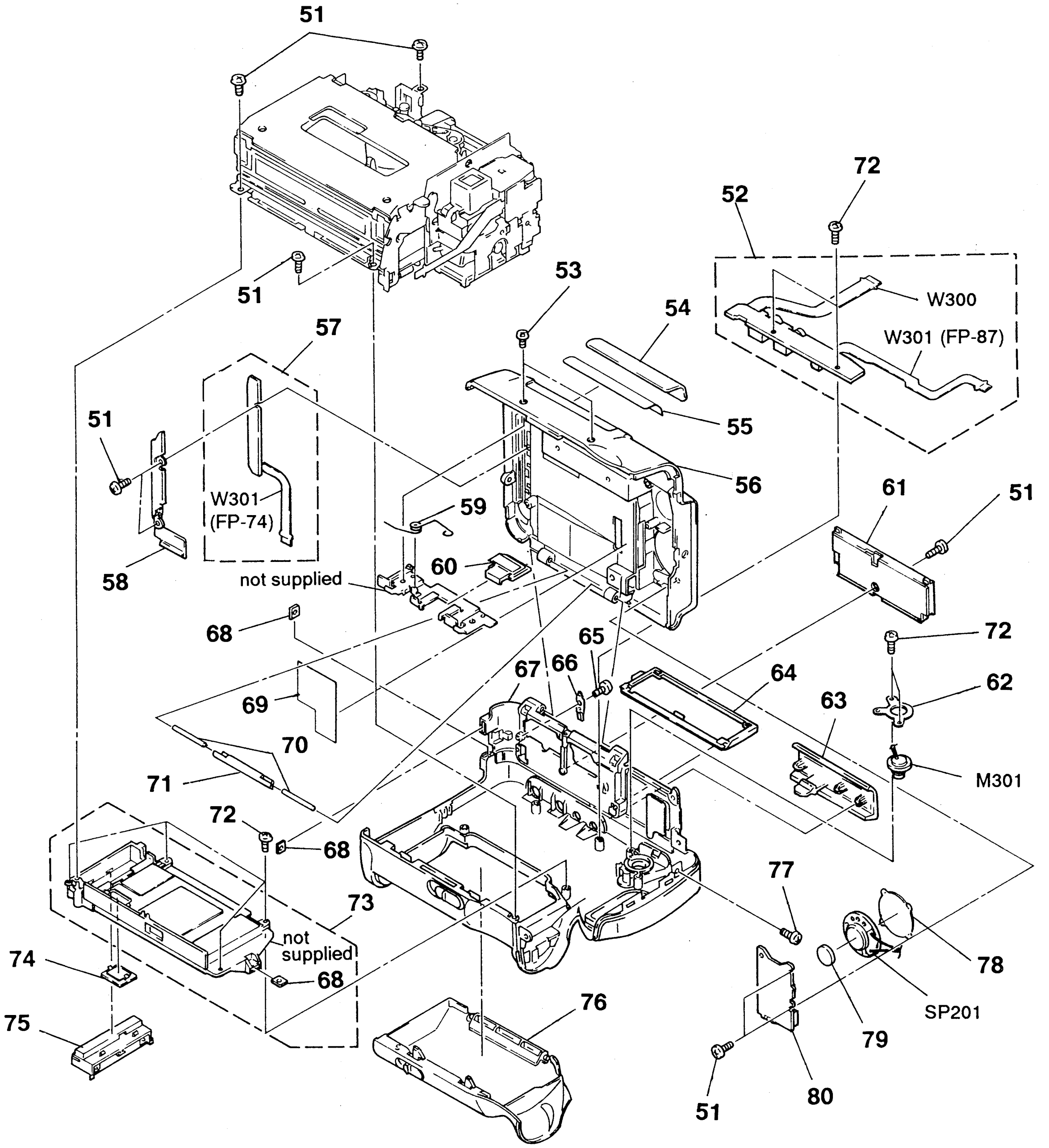
5-1. CABINET (UPPER/BOTTOM) AND PANEL ASSEMBLIES



Ref. No.	Part No.	Description	Remark
1	A-7063-791-A	PD-62 BOARD, COMPLETE	
* 2	X-3943-852-1	CASE, SHIELD (LI) ASSY	
⚠3	1-517-245-11	TUBE, FLUORESCENT, COLD CATHODE	
* 4	3-956-282-01	REFLECTOR	
5	X-3943-458-1	CABINET (BOTTOM) ASSY	
6	3-948-251-01	BUTTON, ON/OFF	
7	1-467-479-11	PLATE, LIGHT GUIDE BLOCK	
8	1-810-328-11	DISPLAY MODULE, LIQUID CRYSTAL	
9	X-3943-588-1	CASE (UPPER) ASSY	
10	3-704-197-22	SCREW (M1.4X2.5), LOCKING	
11	3-958-152-01	PLATE, ORNAMENTAL	
12	3-713-381-01	SCREW (M2X4)	
13	A-7071-919-A	BZ-6 BOARD, COMPLETE	
14	X-3943-896-1	FRAME (LOWER) ASSY	
15	3-948-339-01	SCREW (BTP)(2X3), HEAD	
16	X-3943-899-2	CASE (REAR) ASSY	
17	3-957-684-01	SCREW (M1.4), SPECIAL HEAD	
18	X-3943-897-1	TILT ASSY	
19	X-3943-895-1	HINGE ASSY	

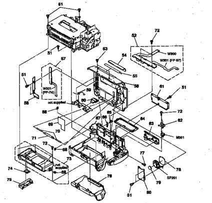
Ref. No.	Part No.	Description	Remark
20	3-384-112-21	BLOCK (H)(M2)	
*⚠21	1-528-476-11	BATTERY, LITHIUM (CR2477)	
* 22	3-703-845-01	LABEL (H)(U/C), MAIN CAUTION (US, CND)	
23	X-3943-487-1	COVER ASSY, LITHIUM	
* 24	3-958-707-01	LABEL, MODEL NUMBER (U)(US, CND)	
* 24	3-957-878-01	LABEL, MODEL NUMBER (AEP)(E)	
25	1-467-374-11	SWITCH BLOCK, CONTROL (CF-36 BOARD)	
26	X-3943-456-1	CABINET (UPPER) ASSY	
27	3-713-601-01	SCREW (B2X5), TAPPING	
* 28	3-958-170-01	SPRING, D LEAF	
* 29	3-958-131-01	PLATE, CLICK, D	
30	3-703-710-41	STICKER, SONY SYMBOL (12)	
31	3-958-172-11	RING, POWER	
32	1-467-429-21	REMOTE COMMANDER (CAM CORDER)(RMT-705)	
33	3-708-412-01	COVER BATTERY, REMOCON	
* 34	3-704-367-01	LABEL (US)	
35	3-719-408-11	SCREW (B2), TAPPING, P3 (2X6)	
W001	1-660-015-11	FP-63 FLEXIBLE BOARD	

5-2. MAIN CABINET ASSEMBLY


51
51
51
51
51
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
68
68
69
70
71
72
72
72
73
74
75
76
77
78
79
80
W300
W301 (FP-87)
W301
(FP-74)
not supplied
not supplied
M301
SP201

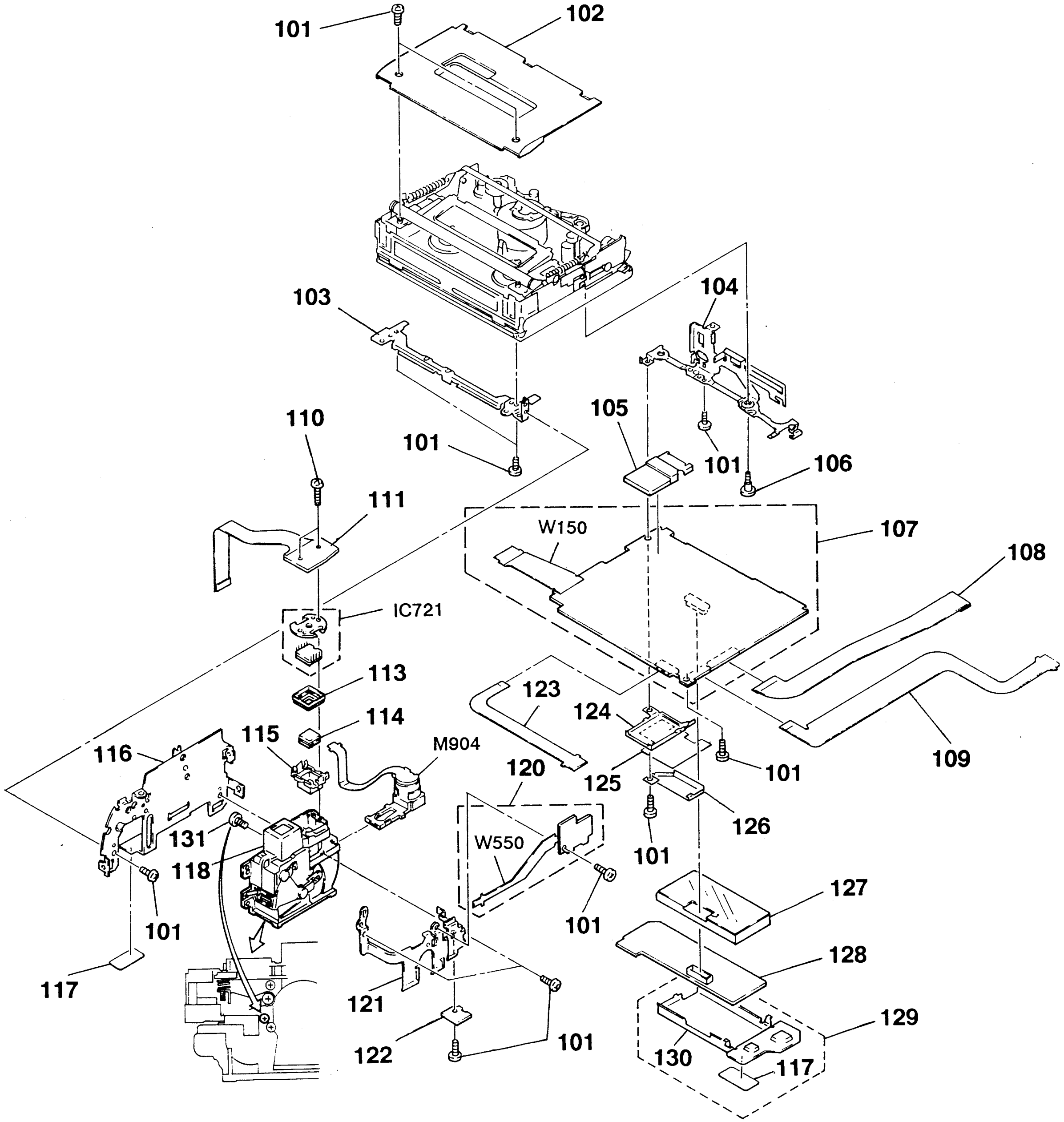
Ref. No.	Part No.	Description	Remark
51	3-948-339-01	SCREW (BTP)(2X5), HEAD	
52	A-7071-918-A	JK-109 BOARD, COMPLETE	
53	3-719-381-01	SCREW (M2X4)	
54	3-956-126-01	STOPPER, GP	
55	3-956-124-01	SHEET, ADHESIVE, GP	
56	X-3943-493-1	CABINET (REAR) ASSY	
57	A-7071-917-A	SW-230 BOARD, COMPLETE	
* 58	3-956-116-01	RETAINER, SW	
59	3-956-119-01	SPRING, OPEN	
* 60	3-956-155-01	OPENER, LID	
61	1-467-375-21	SWITCH BLOCK, CONTROL (FK-60 BOARD)	
* 62	3-956-130-01	HOLDER, MIC	
63	3-956-343-01	COVER, JACK	
64	X-3943-494-1	LID ASSY, FK	
65	3-719-401-41	SCREW (B1.7), TAPPING	
66	3-956-143-01	SPRING, FK CLICK	
67	X-3943-491-1	CABINET (FRONT) ASSY (METALIC GRAY)	
67	X-3943-492-1	CABINET (FRONT) ASSY (PEARL WHITE)	
68	3-718-233-01	NUT, PLATE	
* 69	3-957-455-01	SHEET, CABINET REAR BLIND	
70	3-956-120-01	SHAFT, LID	
71	3-956-114-01	RETAINER, SHAFT	
72	3-719-408-11	SCREW (B2), TAPPING, P3 (P2X6)	
73	X-3943-409-1	HOLDER ASSY, BT	
74	3-956-279-01	LID, CPC	
75	1-537-618-11	TERMINAL BOARD, BATTERY	
76	X-3943-410-1	LID ASSY, BT	
77	3-713-786-51	SCREW (M2X3)	
78	3-956-284-01	SHEET, SP	
* 79	3-956-123-01	CUSHION, SP	
80	A-7063-790-A	SD-10 BOARD, COMPLETE	
SP201	1-544-033-21	SPEAKER	
M301	1-542-215-21	MICROPHONE, CAP (KXM1235-010020)	
W300	1-650-018-11	FP-73 FLEXIBLE BOARD	
W301	1-650-020-11	FP-87 FLEXIBLE BOARD	
W301	1-650-019-11	FP-74 FLEXIBLE BOARD	

5-2. MAIN CABINET ASSEMBLY


61
72
52
53
54
W300
W301 (FP-87)
57
55
56
51
W301 (FP-74)
59
58
60
not supplied
66
61
51
72
62
69
70
64
67
65
63
M301
71
72
68
73
77
74
not supplied
68
75
76
78
SP201
79
80
51

Ref. No.	Part No.	Description	Remark
51	3-948-888-01	SCREW (BTP)(2X6), HEAD	
52	A-7071-818-A	JK-109 BOARD, COMPLETE	
53	3-719-381-01	SCREW (M2X4)	
54	3-956-128-01	STOPPER, GP	
55	3-956-124-01	SHEET, ADHESIVE, GP	
56	X-3943-493-1	CABINET (REAR) ASSY	
57	A-7071-817-A	SW-230 BOARD, COMPLETE	
* 58	3-958-118-01	RETAINER, SW	
59	3-958-119-01	SPRING, OPEN	
* 60	3-958-155-01	OPENER, LID	
61	1-487-376-21	SWITCH BLOCK, CONTROL (FK-60 BOARD)	
* 62	3-958-130-01	HOLDER, MIC	
63	3-955-848-01	COVER, JACK	
64	X-3943-494-1	LID ASSY, FK	
65	3-719-401-41	SCREW (B1.7), TAPPING	
66	3-956-143-01	SPRING, FK CLICK	
67	X-3943-481-1	CABINET (FRONT) ASSY (METALIC GRAY)	
67	X-3943-482-1	CABINET (FRONT) ASSY (PEARL WHITE)	
68	3-718-232-01	NUT, PLATE	
* 69	3-957-455-01	SHEET, CABINET REAR BLIND	
70	3-956-120-01	SHAFT, LID	
71	3-956-114-01	RETAINER, SHAFT	
72	3-719-408-11	SCREW (B2), TAPPING, P3 (P2X6)	
73	X-3943-409-1	HOLDER ASSY, BT	
74	3-956-379-01	LID, CPC	
75	1-537-618-11	TERMINAL BOARD, BATTERY	
76	X-3943-410-1	LID ASSY, BT	
77	3-713-786-51	SCREW (M2X3)	
78	3-958-284-01	SHEET, SP	
* 79	3-956-123-01	CUSHION, SP	
80	A-7063-790-A	SD-10 BOARD, COMPLETE	
SP201	1-544-083-21	SPEAKER	
M301	1-542-215-21	MICROPHONE, CAP (KUM1236-310080)	
W300	1-650-018-11	FP-78 FLEXIBLE BOARD	
W301	1-650-020-11	FP-87 FLEXIBLE BOARD	
W301	1-650-019-11	FP-74 FLEXIBLE BOARD	

5-3. BOARD AND LENS ASSEMBLIES

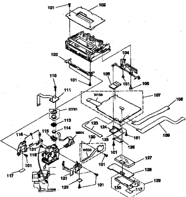


101
102
103
104
110
101
105
101
106
111
W150
107
108
IC721
113
123
114
124
115
M904
116
120
125
101
109
126
131
W550
118
101
127
101
101
128
117
121
129
122
101
130
117

Be sure to read "Note on the CCD Imager replacement" on page 67 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
101	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
102	3-956-201-11	LID, CASSETTE	
* 103	3-956-174-01	FRAME (LEFT)	
* 104	X-3943-394-1	FRAME (RIGHT) ASSY	
* 105	3-956-254-01	CASE (LOWER), SHIELD, RP	
106	3-956-149-01	SCREW (M 1.4 X 2)	
107	A-7063-851-A	VC-134 BOARD, COMPLETE	
108	1-650-015-11	FP-62 FLEXIBLE BOARD	
109	1-650-014-11	FP-61 FLEXIBLE BOARD	
110	3-318-203-11	SCREW (B1.7X6), TAPPING	
111	A-7071-934-A	FP-36 BOARD, COMPLETE	
113	3-953-817-01	RUBBER (F), SEAL	
114	1-547-636-11	FILTER BLOCK, OPTICAL	
115	3-953-816-01	ADAPTOR (F), CCD FITTING	
116	X-3943-401-1	FRAME (UPPER) ASSY	
* 117	3-957-265-01	CLAMP, FPC	
118	3-708-811-01	LENS ASSY	
120	A-7063-788-A	MA-172 BOARD, COMPLETE	
* 121	3-956-158-01	PROTECTOR, LENS	
122	A-7071-920-A	TL-41 BOARD, COMPLETE	
123	1-650-011-11	FP-31 FLEXIBLE BOARD	
* 124	3-956-253-01	CASE (UPPER), SHIELD, RP	
* 125	3-957-543-01	TAPE, RP	
* 126	X-3943-679-1	SHIELD ASSY, RP	
* 127	X-3943-406-1	CASE (LOWER) ASSY, SHIELD, DD	
128	A-7063-789-A	DD-57 BOARD, COMPLETE	
* 129	X-3943-635-1	SHIELD (UPPER) ASSY, DD	
* 130	3-956-251-01	CASE (UPPER), SHIELD, DD	
131	3-708-301-01	SCREW BT2 M1.7X3	
IC721	A-7030-477-A	CCD BLOCK ASSY (ICX056AK-1)(CCD IMAGER)	
M904	3-708-812-01	IRIS UNIT	
W150	1-650-012-11	FP-33 FLEXIBLE BOARD	
W550	1-650-013-11	FP-35 FLEXIBLE BOARD	

5-3. BOARD AND LENS ASSEMBLIES

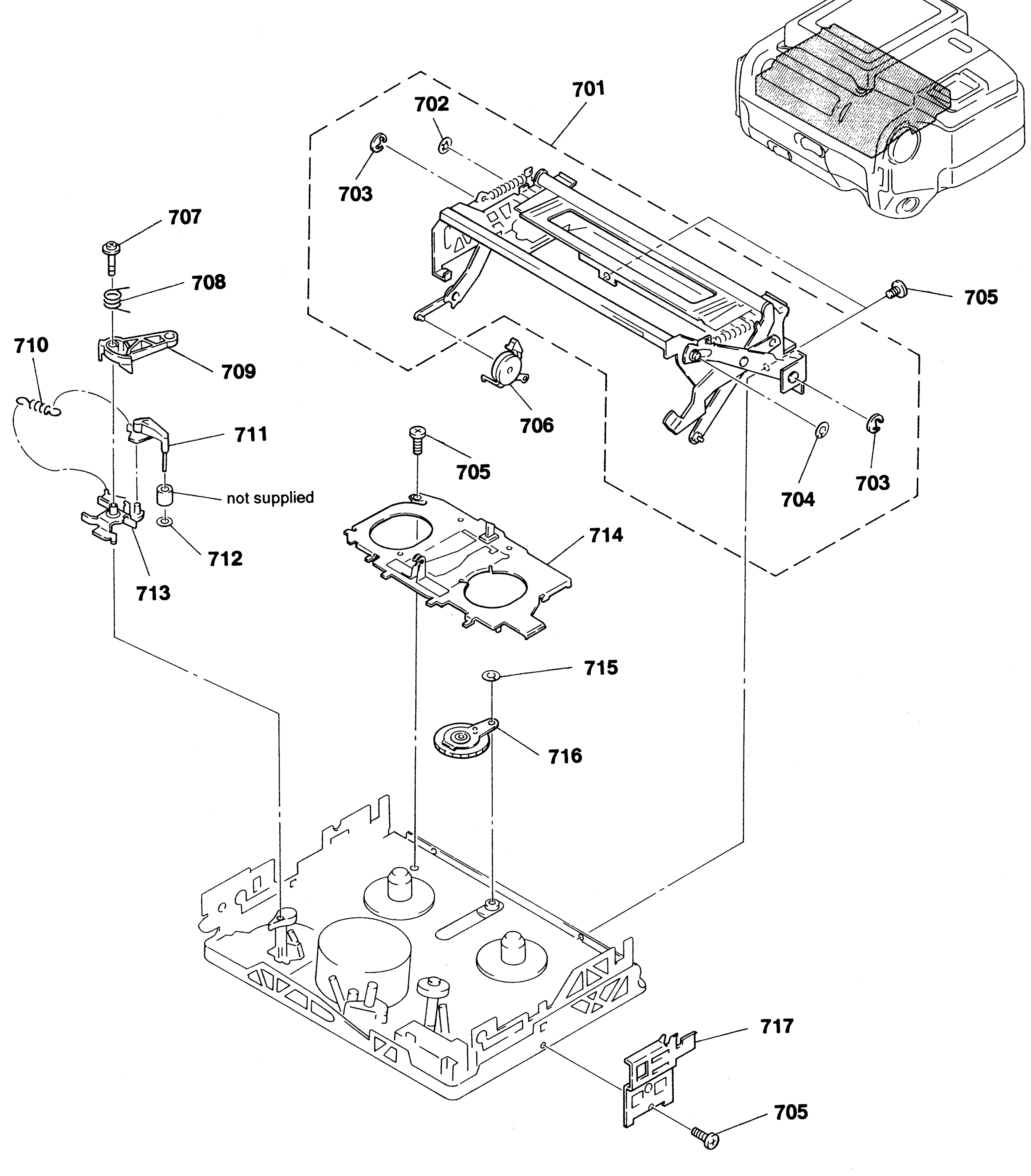

101
102
103
104
110
101
105
101
106
W150
107
108
111
IC721
113
114
123
124
M904
109
116
115
120
125
101
W550
119
126
101
118
127
101
128
117
121
101
122
129
130
117

Be sure to read "Note on the CCD Imager replacement" on page 97 when changing the CCD imager.

	Ref. No.	Part No.	Description	Remark
	101	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
	102	3-958-801-11	LID, CASSETTE	
*	103	3-958-174-01	FRAME (LEFT)	
*	104	X-3943-394-1	FRAME (RIGHT) ASSY	
*	105	3-956-254-01	CASE (LOWER), SHIELD, RP	
	106	3-956-149-01	SCREW (M 1.4 X 2)	
	107	A-7068-851-A	VC-134 BOARD, COMPLETE	
	108	1-650-015-11	FP-82 FLEXIBLE BOARD	
	109	1-650-014-11	FP-81 FLEXIBLE BOARD	
	110	3-818-283-11	SCREW (M1.7X6), TAPPING	
	111	A-7071-864-A	FP-36 BOARD, COMPLETE	
	113	3-959-817-01	RUBBER (P), SEAL	
	114	1-547-656-11	FILTER BLOCK, OPTICAL	
	115	3-959-816-01	ADAPTOR (P), CCD FITTING	
	116	X-3943-401-1	FRAME (UPPER) ASSY	
*	117	3-957-265-01	CLAMP, FPC	
	118	3-708-811-01	LENS ASSY	

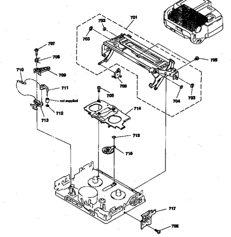
	Ref. No.	Part No.	Description	Remark
	120	A-7063-768-A	MA-173 BOARD, COMPLETE	
*	121	3-958-158-01	PROTECTOR, LENS	
	122	A-7071-930-A	TL-41 BOARD, COMPLETE	
	123	1-650-011-11	FP-31 FLEXIBLE BOARD	
*	124	3-956-253-01	CASE (UPPER), SHIELD, RP	
*	125	3-957-548-01	TAPE, RP	
*	126	X-3943-678-1	SHIELD ASSY, RP	
*	127	X-3943-408-1	CASE (LOWER) ASSY, SHIELD, DD	
	128	A-7063-780-A	DD-57 BOARD, COMPLETE	
*	129	X-3943-635-1	SHIELD (UPPER) ASSY, DD	
*	130	3-956-851-01	CASE (UPPER), SHIELD, DD	
	131	3-703-301-01	SCREW BTP M1.7X3	
	IC721	A-7030-477-A	CCD BLOCK ASSY (ICX084AK-1)(CCD IMAGER)	
	M904	3-708-812-01	IRIS UNIT	
	W150	1-650-012-11	FP-33 FLEXIBLE BOARD	
	W550	1-650-013-11	FP-35 FLEXIBLE BOARD	

5-4. CASSETTE COMPARTMENT BLOCK ASSEMBLY


701
702
703
707
708
710
709
711
706
705
not supplied
712
713
714
704
703
705
715
716
717
705

Ref. No.	Part No.	Description	Remark
701	A-7040-376-A	CASSETTE COMPARTMENT BLOCKASSY	
702	3-669-465-00	WASHER (1.5), STOPPER	
703	7-624-102-04	STOP RING 1.5, TYPE -E	
704	3-331-007-11	WASHER	
705	3-947-503-01	SCREW (M1.4X2.5)	
706	A-7040-377-A	DAMPER ASSY	
707	3-954-941-01	SCREW (M 1.4)	
708	3-954-939-01	SPRING, TORSION	
709	3-954-910-01	LEVER, HP	
710	3-954-940-01	SPRING, TENSION	
711	X-3943-156-1	ARM ASSY, HP	
712	3-315-414-31	WASHER	
713	3-955-824-01	PLATE, HP	
714	X-3943-143-1	RETAINER ASSY, GOOSENECK	
715	3-331-007-21	WASHER	
716	X-3943-142-1	GEAR ASSY, GOOSENECK	
* 717	3-954-745-01	RETAINER, CASSETTE COMPARTMENT	

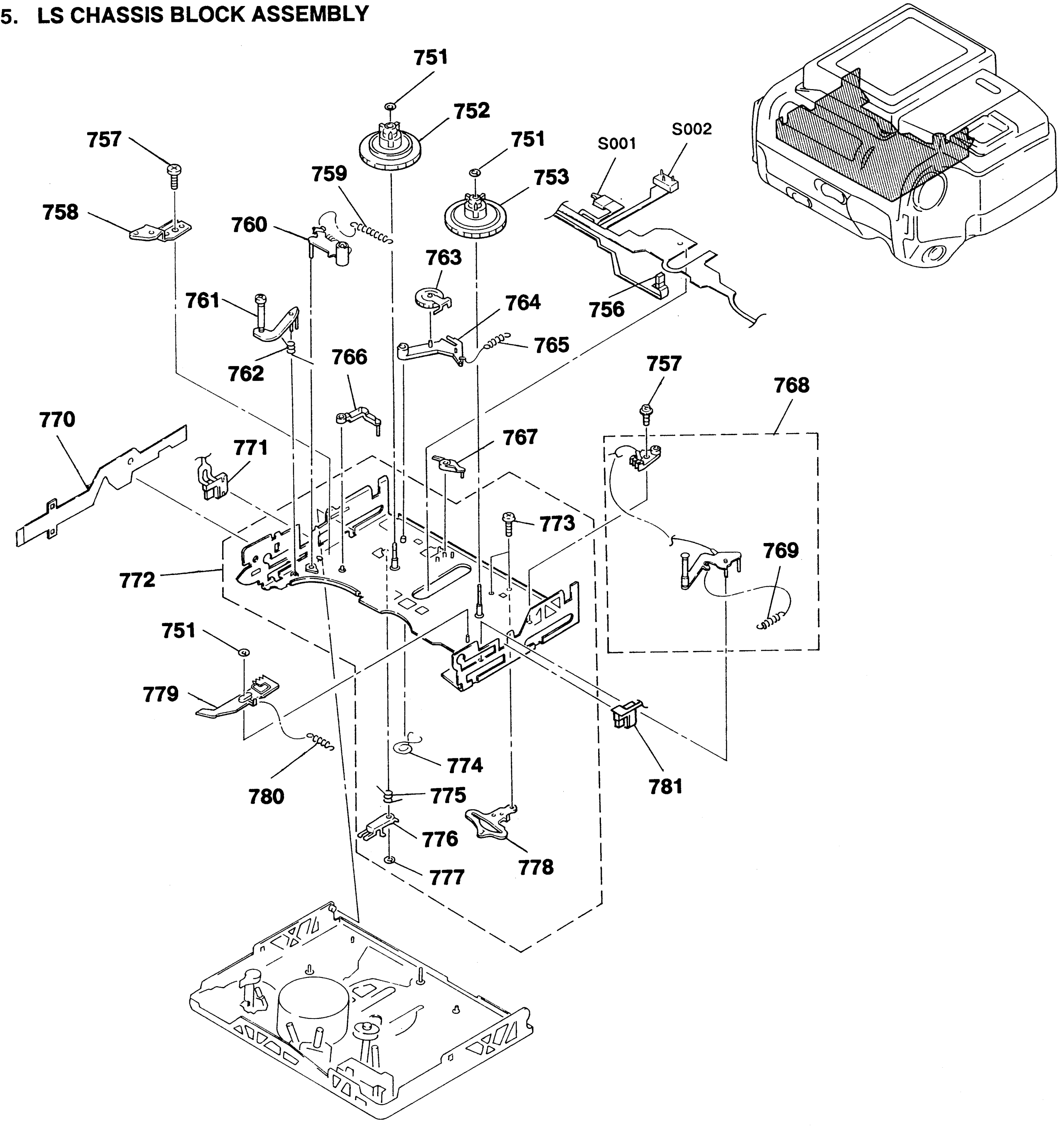
5-4. CASSETTE COMPARTMENT BLOCK ASSEMBLY


701
702
703
705
707
708
709
710
711
706
704
703
not supplied
712
705
714
713
715
716
717
705

Ref. No.	Part No.	Description	Remark
701	A-7040-878-A	CASSETTE COMPARTMENT BLOCK ASSY	
702	3-669-465-00	WASHER (1.5), STOPPER	
703	7-624-102-04	STOP RING 1.5, TYPE -E	
704	3-351-007-11	WASHER	
705	3-947-608-01	SCREW (M1.4X2.5)	
706	A-7040-877-A	DAMPER ASSY	
707	3-954-841-01	SCREW (M 1.4)	
708	3-954-839-01	SPRING, TORSION	
709	3-954-910-01	LEVER, HP	

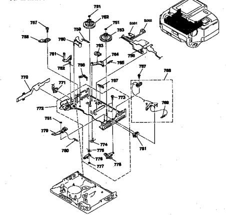
Ref. No.	Part No.	Description	Remark
710	3-954-940-01	SPRING, TENSION	
711	X-3943-156-1	ARM ASSY, HP	
712	3-315-414-31	WASHER	
713	3-955-324-01	PLATE, HP	
714	X-3943-143-1	RETAINER ASSY, GOOSENECK	
715	3-331-007-21	WASHER	
716	X-3943-148-1	GEAR ASSY, GOOSENECK	
* 717	3-954-745-01	RETAINER, CASSETTE COMPARTMENT	

5-5. LS CHASSIS BLOCK ASSEMBLY


751
752
757
751
S001
S002
753
759
758
760
763
761
764
756
765
762
766
757
768
770
767
771
773
769
772
751
779
774
780
775
781
776
778
777

Ref. No.	Part No.	Description	Remark
751	3-331-007-21	WASHER	
752	X-3943-132-1	TABLE ASSY, REEL, T	
753	X-3943-133-1	TABLE ASSY, REEL, S	
756	3-732-046-01	HOLDER, LED	
757	3-947-503-01	SCREW (M1.4X2.5)	
758	3-955-811-01	RETAINER, TG 9 ARM	
759	3-954-730-01	SPRING, TENSION	
760	X-3943-139-1	ARM ASSY, PINCH	
761	A-7040-368-A	ARM BLOCK ASSY, TG9	
762	3-954-729-01	SPRING, TORSION	
763	X-3943-131-1	GEAR ASSY, T SOFT	
764	3-954-853-01	ARM, T SOFT	
765	3-954-854-01	SPRING, TENSION	
766	3-954-850-01	RATCHET, T	
767	3-954-855-01	ARM, T SOFT RELEASE	
768	X-3943-134-1	ARM ASSY, TG1	
769	3-954-871-01	SPRING, TENSION	
770	1-649-039-11	FP-690 FLEXIBLE BOARD	
771	3-954-887-01	HOLDER (T), SENSOR	
772	A-7040-379-A	CHASSIS SUB BLOCK ASSY, LS	
773	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
774	3-954-804-01	SPRING, LIMITER	
775	3-954-806-01	SPRING, TORSION	
776	3-954-805-01	ARM, T RATCHET RELEASE	
777	3-954-807-01	WASHER	
778	3-954-809-01	PLATE, CAM, LS	
779	3-954-851-01	RATCHET, S	
780	3-954-852-01	SPRING, TENSION	
781	3-954-870-01	HOLDER (S), SENSOR	
S001	1-572-288-31	SWITCH, PUSH (C.C. LOCK)	
S002	1-692-614-11	SWITCH, PUSH (3 KEY)(REC PROOF, ME/MP)	

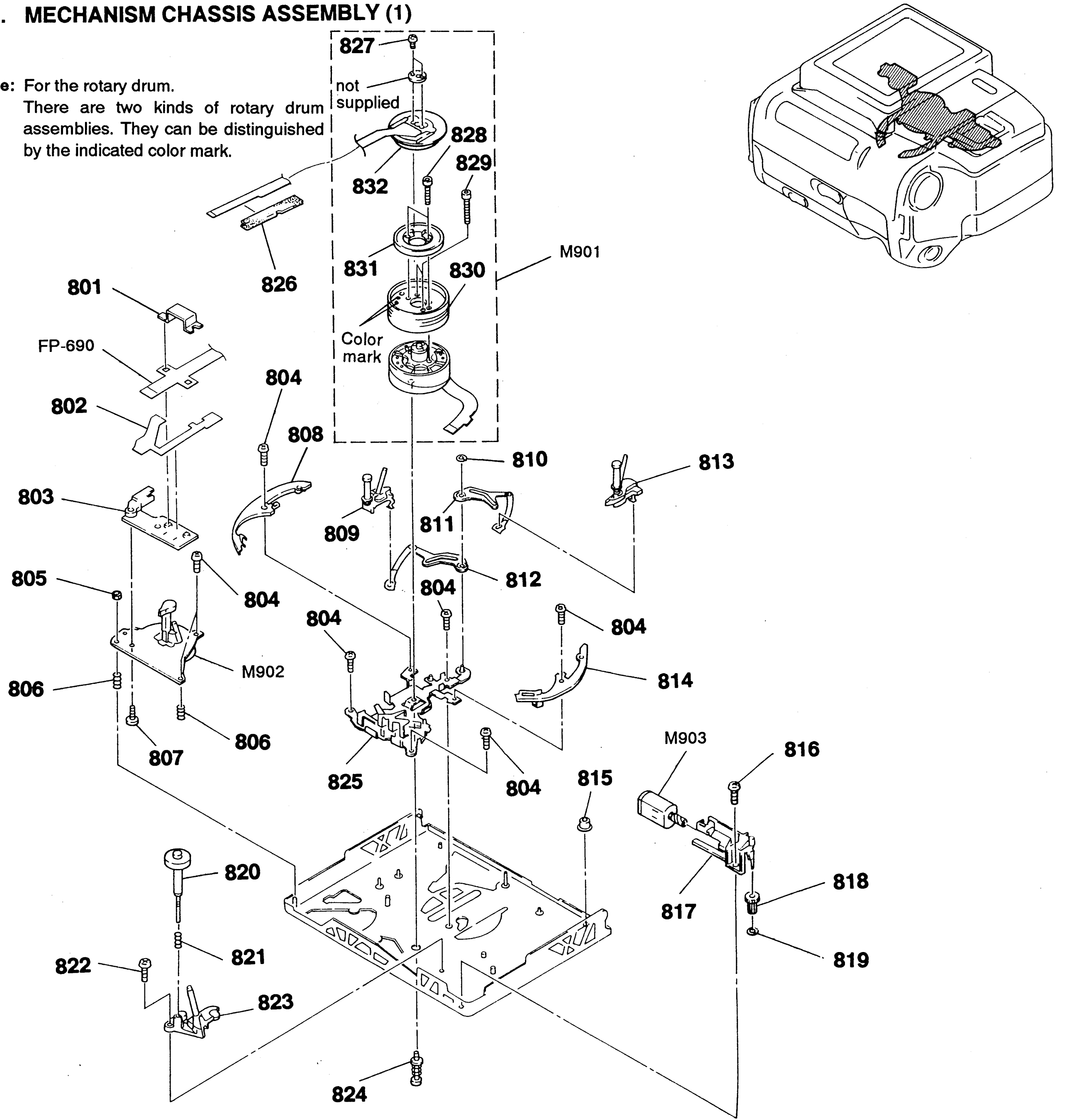
5-5. LS CHASSIS BLOCK ASSEMBLY


751
752
757
758
760
759
751
753
S001
S002
756
763
761
764
762
765
766
767
768
770
771
773
772
769
751
779
780
774
775
776
777
778
781

Ref. No.	Part No.	Description	Remark
751	3-331-007-21	WASHER	
752	X-3943-132-1	TABLE ASSY, REEL, T	
753	X-3943-133-1	TABLE ASSY, REEL, S	
756	3-752-048-01	HOLDER, LED	
757	3-947-503-01	SCREW (M1.4X2.5)	
758	3-955-811-01	RETAINER, TG 9 ARM	
759	3-954-793-01	SPRING, TENSION	
760	X-3943-139-1	ARM ASSY, PINCH	
761	A-7040-858-A	ARM BLOCK ASSY, TG9	
762	3-954-798-01	SPRING, TORSION	
763	X-3943-131-1	GEAR ASSY, T SOFT	
764	3-954-853-01	ARM, T SOFT	
765	3-954-854-01	SPRING, TENSION	
766	3-954-850-01	RATCHET, T	
767	3-954-855-01	ARM, T SOFT RELEASE	
768	X-3943-134-1	ARM ASSY, TG1	
769	3-954-871-01	SPRING, TENSION	
770	1-640-029-11	FP-690 FLEXIBLE BOARD	
771	3-954-857-01	HOLDER (T), SENSOR	
772	A-7040-879-A	CHASSIS SUB BLOCK ASSY, LS	
773	3-728-108-11	SCREW (M1.4X1.6), SPECIAL HEAD	
774	3-954-804-01	SPRING, LIMITER	
775	3-954-908-01	SPRING, TORSION	
776	3-954-926-01	ARM, T RATCHET RELEASE	
777	3-954-807-01	WASHER	
778	3-954-809-01	PLATE, CAM, LS	
779	3-954-851-01	RATCHET, S	
780	3-954-852-01	SPRING, TENSION	
781	3-954-870-01	HOLDER (S), SENSOR	
S001	1-572-288-81	SWITCH, PUSH (C.C. LOCK)	
S002	1-688-614-11	SWITCH, PUSH (3 KEY)(REC PROOF, MR/MF)	

5-6. MECHANISM CHASSIS ASSEMBLY (1)

Note: For the rotary drum.
There are two kinds of rotary drum assemblies. They can be distinguished by the indicated color mark.

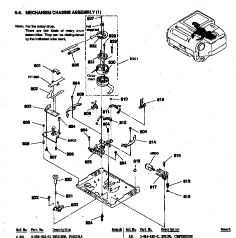


827
not supplied
828
829
832
826
831
830
M901
801
Color mark
FP-690
804
802
808
810
813
803
809
811
812
805
804
804
804
804
M902
814
806
806
807
825
804
M903
816
815
820
818
817
822
821
819
823
824

Ref. No.	Part No.	Description	Remark
* 801	3-956-352-01	RETAINER, FLEXIBLE	
802	1-649-912-11	FP-94 FLEXIBLE BOARD	
* 803	3-956-057-01	BASE, HOLD	
804	3-947-503-01	SCREW (M1.4X2.5)	
805	3-940-892-01	NUT, HEXAGON	
806	3-954-907-01	SPRING, COMPRESSION	
807	2-626-645-01	SCREW (M1.7), WAVE	
808	3-954-899-01	RAIL, T	
809	A-7040-375-A	COASTER (T) BLOCK ASSY	
810	3-331-007-21	WASHER	
811	X-3943-149-1	ARM ASSY, S	
812	X-3943-150-1	ARM ASSY, T	
813	A-7040-374-A	COASTER (S) BLOCK ASSY	
814	3-954-898-01	RAIL, S	
815	3-954-739-01	ROLLER, LS GUIDE	
816	3-955-807-01	SCREW (M1.6 X 2)	
817	X-3943-128-1	HOLDER ASSY, MOTOR	
818	3-954-794-01	GEAR, WHEEL	
819	3-728-091-01	WASHER, STOPPER	
820	X-3943-146-1	ROLLER ASSY, TG3	
821	3-954-886-01	SPRING, COMPRESSION	
822	3-703-816-51	SCREW (M1.4X3.5), SPECIAL HEAD	
823	X-3943-145-1	BASE ASSY, TG3	
824	X-3943-151-1	SCREW ASSY, FITTING	
825	X-3943-147-1	BASE ASSY, DRUM	
* 826	3-957-374-01	CUSHION, DF	
827	3-728-108-41	SCREW (M1.4X2.7)	
828	3-727-807-01	BOLT (M1.7X3.3), HEXAGON SOCKET	
829	3-727-809-01	BOLT (M1.4X5), HEXAGON SOCKET	
830	A-7049-536-A	DRUM, ASSY UPPER (DGR-76-R-(1)) (Color mark: GREEN, GREEN/RED, BLACK, BLACK/RED)	
830	A-7049-534-A	DRUM, ASSY UPPER (DGR-76-R-(2)) (Color mark: RED, RED/RED, BLUE, BLUE/RED)	
831	A-7049-219-A	MOTOR BLOCK ASSY (ROTOR)	
832	A-7049-564-A	MOTOR BLOCK ASSY (STATOR)	
M901	A-7048-684-A	DRUM ASSY (DGH-0A5A-R)	
M902	8-835-498-01	MOTOR, DC SCE-0401A (CAPSTAN)	
M903	X-3943-127-1	MOTOR ASSY, L (LOADING)	

5-6. MECHANISM CHASSIS ASSEMBLY (1)

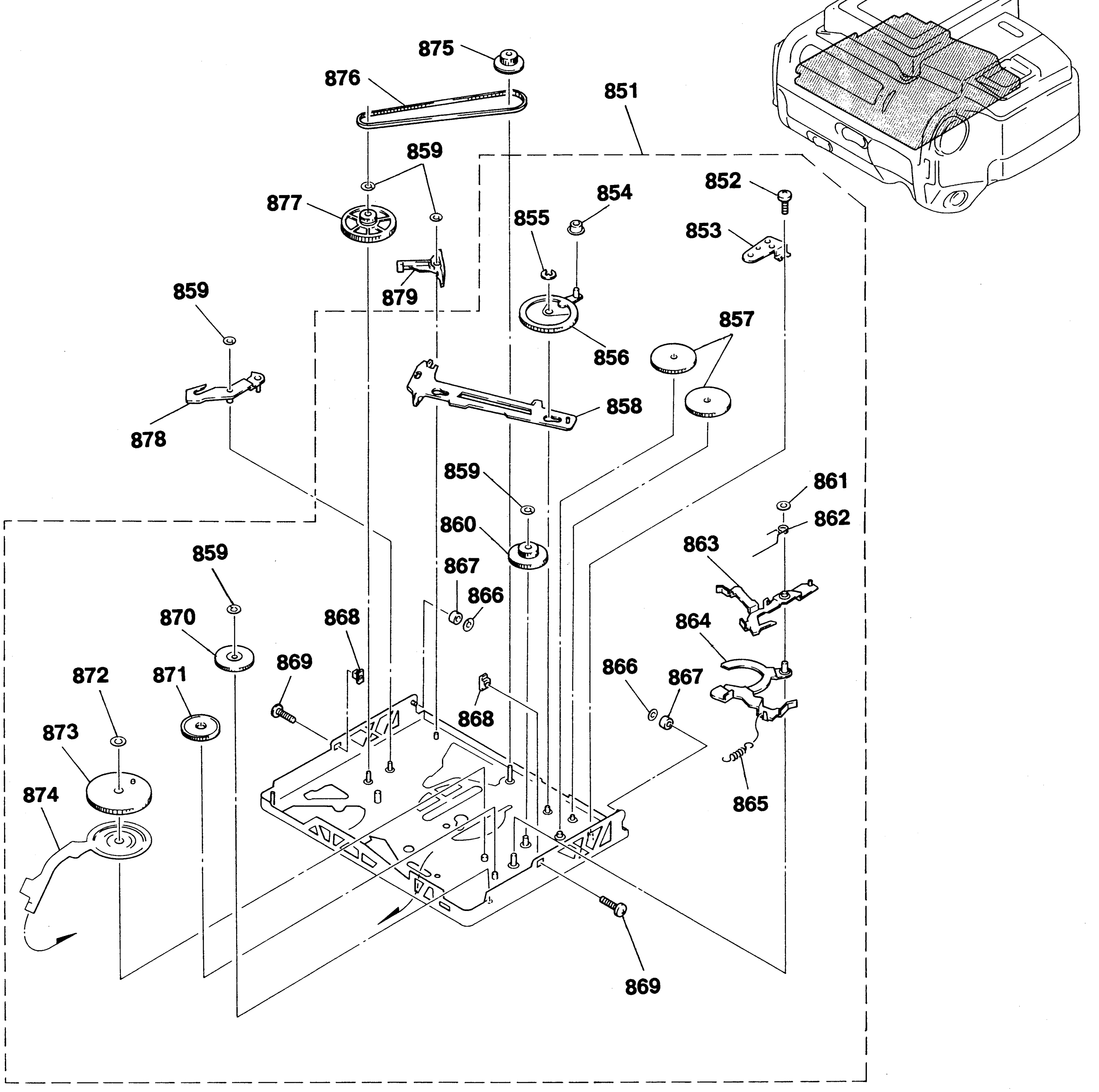
Note: For the rotary drum.
There are two kinds of rotary drum assemblies. They can be distinguished by the indicated color mark.


827
not supplied
828
829
832
826
831
830
M901
Color mark
801
FP-560
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
M903
817
818
819
820
821
822
823
824
825
M902

Ref. No.	Part No.	Description	Remark
* 801	3-956-358-01	RETAINER, FLEXIBLE	
802	1-649-812-11	FP-84 FLEXIBLE BOARD	
* 803	3-956-057-01	BASE, HOLD	
804	3-947-509-01	SCREW (M1.4X2.5)	
805	3-940-893-01	NUT, HEXAGON	
806	3-954-807-01	SPRING, COMPRESSION	
807	3-676-645-01	SCREW (M1.7), WAVE	
808	3-954-899-01	RAIL, T	
809	A-7040-375-A	COASTER (T) BLOCK ASSY	
810	3-331-607-21	WASHER	
811	X-3943-140-1	ARM ASSY, S	
812	X-3943-150-1	ARM ASSY, T	
813	A-7040-374-A	COASTER (S) BLOCK ASSY	
814	3-954-898-01	RAIL, S	
815	3-954-738-01	ROLLER, LS GUIDE	
816	3-955-807-01	SCREW (M1.6 X 2)	
817	X-3943-128-1	HOLDER ASSY, MOTOR	
818	3-954-784-21	GEAR, WHEEL	
819	3-728-091-01	WASHER, STOPPER	
820	X-3943-148-1	ROLLER ASSY, TG8	

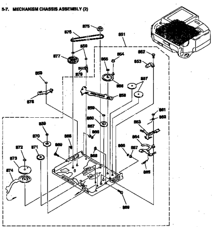
Ref. No.	Part No.	Description	Remark
821	3-954-886-01	SPRING, COMPRESSION	
822	3-703-816-51	SCREW (M1.4X3.5), SPECIAL HEAD	
823	X-3943-146-1	BASE ASSY, TG2	
824	X-3943-151-1	SCREW ASSY, FITTING	
825	X-3943-147-1	BASE ASSY, DRUM	
* 826	3-957-574-01	CUSHION, DF	
827	3-728-108-41	SCREW (M1.4X2.7)	
828	3-737-807-01	BOLT (M1.7X3.3), HEXAGON SOCKET	
829	3-737-809-01	BOLT (M1.4X5), HEXAGON SOCKET	
830	A-7049-536-A	DRUM, ASSY UPPER (DGR-76-R-(1)) (Color mark: GREEN, GREEN/RED, BLACK, BLACK/RED)	
830	A-7049-634-A	DRUM, ASSY UPPER (DGR-76-R-(2)) (Color mark: RED, RED/RED, BLUE, BLUE/RED)	
831	A-7049-219-A	MOTOR BLOCK ASSY (ROTOR)	
832	A-7049-684-A	MOTOR BLOCK ASSY (STATOR)	
M901	A-7048-684-A	DRUM ASSY (DGS-0A5A-R)	
M902	8-835-496-01	MOTOR, DC SCR-0401A (CAPSTAN)	
M903	X-3943-127-1	MOTOR ASSY, L (LOADING)	

5-7. MECHANISM CHASSIS ASSEMBLY (2)


875
876
851
859
852
854
877
855
853
879
859
857
856
858
878
859
861
862
860
863
867
866
859
870
868
864
869
872
871
866
867
873
868
874
865
869

Ref. No.	Part No.	Description	Remark
851	A-7040-378-A	CHASSIS SUB BLOCK ASSY, MECH	
852	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
* 853	3-954-744-01	RETAINER, GEAR	
854	3-957-367-01	ROLLER, LS GUIDE (2)	
855	3-578-254-00	RING, RETAINING, E1.2	
856	X-3943-124-1	GEAR ASSY, MODE	
857	3-954-747-01	GEAR (D)	
858	3-954-748-01	SLIDER, M	
859	3-331-007-21	WASHER	
860	3-954-746-01	GEAR (C)	
861	3-955-804-01	WASHER	
862	3-954-791-01	SPRING, TORSION COIL	
863	X-3943-125-1	ARM ASSY, MODE	
864	X-3943-126-1	ARM (2) ASSY, MODE	
865	3-954-790-01	SPRING, TENSION	
866	3-331-007-11	WASHER	
867	3-954-742-01	ROLLER, LS	
* 868	3-954-743-01	BOSS, LS GUIDE	
869	3-947-503-01	SCREW (M1.4X2.5)	
870	3-954-749-01	GEAR (A)	
871	3-954-750-01	GEAR (B)	
872	3-579-788-01	WASHER, STOPPER	
873	3-954-752-01	GEAR, LS	
874	1-649-038-11	FP-685 FLEXIBLE BOARD	
875	3-954-788-01	PULLEY, RELAY	
876	3-954-789-01	BELT, RELAY	
877	X-3943-123-1	GEAR ASSY, CONVERSION	
878	X-3943-336-1	ARM ASSY, PINCH RELEASE	
879	3-954-741-01	ARM, EJ	

5-7. MECHANISM CHASSIS ASSEMBLY (2)


875
876
851
856
862
877
854
853
855
879
859
857
878
858
861
862
859
860
867
866
863
870
868
869
864
872
871
868
866
867
873
865
874
869

Ref. No.	Part No.	Description	Remark
851	A-7040-376-A	CHASSIS SUB BLOCK ASSY, MECH	
852	3-738-108-11	SCREW (M1.4X1.6), SPECIAL HEAD	
* 853	3-954-744-01	RETAINER, GEAR	
854	3-937-387-01	ROLLER, LS GUIDE (2)	
855	3-578-254-00	RING, RETAINING, RL.2	
856	X-3948-124-1	GEAR ASSY, MODE	
857	3-954-747-01	GEAR (D)	
858	3-954-748-01	SLIDER, M	
859	3-881-007-21	WASHER	
860	3-954-746-01	GEAR (C)	
861	3-965-604-01	WASHER	
862	3-954-791-01	SPRING, TORSION COIL	
863	X-3948-125-1	ARM ASSY, MODE	
864	X-3948-126-1	ARM (2) ASSY, MODE	
865	3-954-790-01	SPRING, TENSION	

Ref. No.	Part No.	Description	Remark
866	3-881-007-11	WASHER	
867	3-954-742-01	ROLLER, LS	
* 868	3-954-743-01	BOSS, LS GUIDE	
869	3-947-603-01	SCREW (M1.4X2.5)	
870	3-954-749-01	GEAR (A)	
871	3-954-750-01	GEAR (B)	
872	3-578-788-01	WASHER, STOPPER	
873	3-954-752-01	GEAR, LS	
874	1-649-028-11	FP-635 FLEXIBLE BOARD	
875	3-954-788-01	PULLEY, RELAY	
876	3-954-789-01	BELT, RELAY	
877	X-3948-129-1	GEAR ASSY, CONVERSION	
878	X-3948-886-1	ARM ASSY, PINCH RELEASE	
879	3-954-741-01	ARM, EJ	

DD-57

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description	Remark
*	A-7063-789-A	DD-57 BOARD, COMPLETE **********************	
			(Ref. No. 3,000 Series)
		< CAPACITOR >	
C890	1-135-165-11	TANTAL. CHIP 33uF 20% 16V	
C891	1-135-159-21	TANTALUM CHIP 10uF 10% 20V	
C892	1-135-159-21	TANTALUM CHIP 10uF 10% 20V	
C895	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C950	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C951	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C952	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C953	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C954	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C955	1-163-010-11	CERAMIC CHIP 0.0012uF 10% 50V	
C956	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C957	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C958	1-164-362-11	CERAMIC CHIP 470PF 5% 50V	
C959	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C960	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C961	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C962	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C963	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C964	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C965	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C966	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C967	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V	
C969	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C970	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C971	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C972	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C973	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C974	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C975	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C976	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C977	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C978	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C979	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C980	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C981	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C982	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C983	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C984	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C985	1-164-337-11	CERAMIC CHIP 2.2uF 16V	
C986	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C987	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C988	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C989	1-164-337-11	CERAMIC CHIP 2.2uF 16V	
C990	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C991	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C992	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C993	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C994	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C995	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C996	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C997	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C998	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C999	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
		< CONNECTOR >	
* CN950	1-580-756-21	PIN, CONNECTOR 7P	
* CN951	1-691-529-11	CONNECTOR, BOARD TO BOARD 30P	
* CN952	1-580-056-21	PIN, CONNECTOR 3P	
* CN953	1-750-502-11	PIN, CONNECTOR (1.5MM))(SMD) 3P	
		< DIODE >	
D950	8-719-027-77	DIODE MA796	
D951	8-719-016-74	DIODE 1SS352	
D951	8-719-404-46	DIODE MA110	
D952	8-719-041-31	DIODE 015Z12	
D953	8-719-041-31	DIODE 015Z12	
		< FUSE >	
⚠F950	1-576-212-21	FUSE, CHIP	
⚠F951	1-576-212-21	FUSE, CHIP	
⚠F952	1-532-777-21	FUSE, MICRO (SECONDARY)	
		< IC >	
IC950	8-759-060-94	IC MB3785APFV-G-BND-ER	
IC951	8-759-062-00	IC MB3788PFV	
		< COIL >	
L950	1-424-674-11	COIL, CHOKE 22uH	
L951	1-424-653-11	COIL, CHOKE 10uH	
L952	1-412-056-11	INDUCTOR CHIP 4.7uH	
L953	1-412-056-11	INDUCTOR CHIP 4.7uH	
L954	1-412-056-11	INDUCTOR CHIP 4.7uH	

Ref. No.	Part No.	Description	Remark
L955	1-424-653-11	COIL, CHOKE 10uH	
L956	1-412-066-21	INDUCTOR CHIP 220uH	
L957	1-412-066-21	INDUCTOR CHIP 220uH	
L958	1-424-674-11	COIL, CHOKE 22uH	
L959	1-412-056-11	INDUCTOR CHIP 4.7uH	
L960	1-412-056-11	INDUCTOR CHIP 4.7uH	
L961	1-412-056-11	INDUCTOR CHIP 4.7uH	
L962	1-412-056-11	INDUCTOR CHIP 4.7uH	
L963	1-424-675-11	COIL, CHOKE 33uH	
L964	1-412-056-11	INDUCTOR CHIP 4.7uH	
L965	1-424-673-11	COIL, CHOKE 4.7uH	
L966	1-424-674-11	COIL, CHOKE 22uH	
L967	1-424-674-11	COIL, CHOKE 22uH	
L968	1-412-026-11	INDUCTOR CHIP 1uH	
L969	1-412-026-11	INDUCTOR CHIP 1uH	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS950	1-576-123-21	LINK, IC	

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q950	8-729-823-84	TRANSISTOR	FP102
Q951	8-729-428-88	TRANSISTOR	UN9113
Q952	8-729-804-41	TRANSISTOR	2SB1122-S
Q953	8-729-015-60	TRANSISTOR	2SJ316
Q954	8-729-823-84	TRANSISTOR	FP102
Q955	8-729-017-61	TRANSISTOR	2SB1581
Q956	8-729-823-82	TRANSISTOR	FP101
Q957	8-729-425-50	TRANSISTOR	2SB1462Q
Q958	8-729-427-72	TRANSISTOR	XP4501
Q959	8-729-823-82	TRANSISTOR	FP101
Q960	8-729-823-82	TRANSISTOR	FP101
Q961	8-729-427-70	TRANSISTOR	XP4401
Q962	8-729-024-24	TRANSISTOR	2SK2154-TL
Q963	8-729-024-24	TRANSISTOR	2SK2154-TL
Q964	8-729-428-88	TRANSISTOR	UN9113
Q965	8-729-429-18	TRANSISTOR	UN9213
Q966	8-729-429-18	TRANSISTOR	UN9213

< RESISTOR >

Ref. No.	Part No.	Description			
R298	1-218-688-11	METAL CHIP	680	0.50%	1/16W
R890	1-218-977-11	METAL GLAZE	100K	5%	1/16W
R891	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R892	1-218-971-11	METAL GLAZE	33K	5%	1/16W
R899	1-218-990-11	METAL GLAZE	0	5%	1/16W
R950	1-218-720-11	METAL CHIP	15K	0.50%	1/16W
R951	1-218-979-11	METAL GLAZE	150K	5%	1/16W
R952	1-218-727-11	METAL CHIP	30K	0.50%	1/16W
R953	1-218-873-11	METAL CHIP	12K	0.50%	1/16W
R954	1-218-736-11	METAL CHIP	68K	0.50%	1/16W
R955	1-218-977-11	METAL GLAZE	100K	5%	1/16W
R956	1-218-720-11	METAL CHIP	15K	0.50%	1/16W
R957	1-218-867-11	METAL CHIP	6.8K	0.50%	1/16W
R958	1-218-977-11	METAL GLAZE	100K	5%	1/16W
R959	1-218-966-11	METAL GLAZE	12K	5%	1/16W
R960	1-218-964-11	METAL GLAZE	8.2K	5%	1/16W
R961	1-218-962-11	METAL GLAZE	5.6K	5%	1/16W
R962	1-218-990-11	METAL GLAZE	0	5%	1/16W
R963	1-218-974-11	METAL GLAZE	56K	5%	1/16W
R964	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R965	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R966	1-218-949-11	METAL GLAZE	470	5%	1/16W
R967	1-218-707-11	METAL CHIP	4.3K	0.50%	1/16W
R968	1-218-949-11	METAL GLAZE	470	5%	1/16W
R969	1-218-949-11	METAL GLAZE	470	5%	1/16W
R970	1-218-949-11	METAL GLAZE	470	5%	1/16W
R971	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R972	1-218-951-11	METAL GLAZE	680	5%	1/16W
R973	1-218-964-11	METAL GLAZE	8.2K	5%	1/16W
R974	1-218-867-11	METAL CHIP	6.8K	0.50%	1/16W
R975	1-218-722-11	METAL CHIP	18K	0.50%	1/16W
R976	1-218-721-11	METAL CHIP	16K	0.50%	1/16W
R977	1-216-804-11	METAL CHIP	39	5%	1/16W
R978	1-218-702-11	METAL CHIP	2.7K	0.50%	1/16W
R979	1-218-724-11	METAL CHIP	22K	0.50%	1/16W
R980	1-218-975-11	METAL GLAZE	68K	5%	1/16W
R981	1-218-975-11	METAL GLAZE	68K	5%	1/16W
R982	1-218-990-11	METAL GLAZE	0	5%	1/16W
R983	1-218-945-11	METAL GLAZE	220	5%	1/16W
R984	1-218-945-11	METAL GLAZE	220	5%	1/16W
R985	1-218-990-11	METAL GLAZE	0	5%	1/16W
R986	1-218-972-11	METAL GLAZE	39K	5%	1/16W
R987	1-218-975-11	METAL GLAZE	68K	5%	1/16W
R988	1-218-975-11	METAL GLAZE	68K	5%	1/16W
R989	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R990	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R991	1-218-724-11	METAL CHIP	22K	0.50%	1/16W
R992	1-218-724-11	METAL CHIP	22K	0.50%	1/16W
R993	1-218-724-11	METAL CHIP	22K	0.50%	1/16W
R994	1-218-724-11	METAL CHIP	22K	0.50%	1/16W
R995	1-218-965-11	METAL GLAZE	10K	5%	1/16W
R996	1-218-960-11	METAL GLAZE	3.9K	5%	1/16W
R997	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R998	1-218-953-11	METAL GLAZE	1K	5%	1/16W
R999	1-218-977-11	METAL GLAZE	100K	5%	1/16W

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T950	1-423-867-11	TRANSFORMER, CONVERTER	

****

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

EZ-6

Ref.No.	Part No.	Description	Remark
*	A-7071-919-A	EZ-6 BOARD, COMPLETE *********************	(Ref. No. 3,000 Series)
		< CAPACITOR >	
C550	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C551	1-162-974-11	CERAMIC CHIP 0.01uF	50V
		< CONNECTOR >	
CN550	1-573-362-11	CONNECTOR, FFC/FPC 22P	
* CN551	1-764-177-11	PIN, CONNECTOR (SMD)(1.5MM) 7P	
CN552	1-537-439-11	TARMINAL BOARD, CONNECTOR	(EASY CONNECTOR)
		< DIODE >	
D550	8-719-016-74	DIODE 1SS352	
D550	8-719-404-46	DIODE MA110	
D551	8-719-040-56	DIODE 015Z8.2-TPH3	
D552	8-719-040-56	DIODE 015Z8.2-TPH3	
D553	8-719-040-31	DIODE 015Z5.1-TPH3	
D554	8-719-016-74	DIODE 1SS352	
D554	8-719-404-46	DIODE MA110	
D555	8-719-041-10	DIODE 015Z9.1-TPH3	
D557	8-719-040-56	DIODE 015Z8.2-TPH3	
D558	8-719-040-56	DIODE 015Z8.2-TPH3	
D559	8-719-040-56	DIODE 015Z8.2-TPH3	
D560	8-719-040-56	DIODE 015Z8.2-TPH3	
D562	8-719-041-10	DIODE 015Z9.1-TPH3	
D563	8-719-040-56	DIODE 015Z8.2-TPH3	
D564	8-719-040-56	DIODE 015Z8.2-TPH3	
D565	8-719-040-56	DIODE 015Z8.2-TPH3	
D566	8-719-040-56	DIODE 015Z8.2-TPH3	
D567	8-719-040-56	DIODE 015Z8.2-TPH3	
D568	8-719-040-56	DIODE 015Z8.2-TPH3	
D569	8-719-040-56	DIODE 015Z8.2-TPH3	
D570	8-719-016-74	DIODE 1SS352	
D570	8-719-404-46	DIODE MA110	
D571	8-719-040-06	DIODE 015Z2.7-TPH3	
D572	8-719-016-74	DIODE 1SS352	
D572	8-719-404-46	DIODE MA110	
		< IC >	
IC550	8-759-998-98	IC LM358D	
		< TRANSISTOR >	
Q551	8-729-428-88	TRANSISTOR UN9113	
Q552	8-729-429-18	TRANSISTOR UN9213	
Q553	8-729-429-18	TRANSISTOR UN9213	
Q554	8-729-425-50	TRANSISTOR 2SB1462Q	
Q555	8-729-428-88	TRANSISTOR UN9113	

Ref.No.	Part No.	Description	Remark
Q556	8-729-429-02	TRANSISTOR UN9110-QRS	
Q557	8-729-425-64	TRANSISTOR 2SD2216Q	
Q558	8-729-425-50	TRANSISTOR 2SB1462Q	
Q559	8-729-429-18	TRANSISTOR UN9213	
Q560	8-729-018-47	TRANSISTOR 2SD2443	
Q561	8-729-429-18	TRANSISTOR UN9213	
Q562	8-729-429-18	TRANSISTOR UN9213	
Q565	8-729-425-50	TRANSISTOR 2SB1462Q	
Q566	8-729-428-88	TRANSISTOR UN9113	
		< RESISTOR >	
R550	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R551	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R552	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R553	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R554	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R555	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R556	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R557	1-218-698-11	METAL CHIP 1.8K 0.50% 1/16W	
R559	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	
R561	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R562	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R563	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R564	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R566	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R567	1-208-743-11	METAL GLAZE 0.56 5% 1/10W	
R568	1-208-743-11	METAL GLAZE 0.56 5% 1/10W	
R569	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R573	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R574	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R575	1-218-738-11	METAL CHIP 82K 0.50% 1/16W	
R576	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	
R577	1-218-837-11	METAL CHIP 390 0.50% 1/16W	
R578	1-216-864-11	METAL CHIP 0 5% 1/16W	
R579	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R582	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R583	1-216-864-11	METAL CHIP 0 5% 1/16W	
		< SWITCH >	
S550	1-572-288-11	SWITCH, PUSH (EJECT)	
S551	1-571-275-31	SWITCH, SLIDE (REMOTE)	
S552	1-571-275-31	SWITCH, SLIDE (BEEP)	
S553	1-571-275-31	SWITCH, SLIDE (S/S CHNG)	

****

Ref. No.	Part No.	Description	Remark
*	A-7071-934-A	FP-36 BOARD, COMPLETE	

****

(Ref. No. 4,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C726	1-164-346-11	CERAMIC CHIP 1uF	16V
C727	1-135-210-11	TANTALUM CHIP 4.7uF 20%	10V
C728	1-162-915-11	CERAMIC CHIP 10PF 0.5PF	50V
C729	1-164-156-11	CERAMIC CHIP 0.1uF	25V

< DIODE >

Ref. No.	Part No.	Description	Remark
D721	8-719-951-20	LED BR1102W (CAUTION)	
D723	8-719-989-79	LED AA1102W (TALLY)	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q724	8-729-117-73	TRANSISTOR 2SC4178-F14	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R721	1-216-820-11	METAL CHIP 820 5%	1/16W
R722	1-216-295-91	METAL GLAZE 0 5%	1/10W
R723	1-216-820-11	METAL CHIP 820 5%	1/16W
R724	1-216-820-11	METAL CHIP 820 5%	1/16W
R734	1-216-829-11	METAL CHIP 4.7K 5%	1/16W

****

FP-689 BOARD, COMPLETE

****

(Ref. No. 9,000 Series)

Ref. No.	Part No.	Description	Remark
	3-732-046-01	HOLDER, LED	
	3-954-870-01	HOLDER (S), SENSOR	
	3-954-887-01	HOLDER (T), SENSOR	

< DIODE >

Ref. No.	Part No.	Description	Remark
D001	8-719-988-42	DIODE GL453S	

< HALL ELEMENT >

Ref. No.	Part No.	Description	Remark
H001	8-719-033-37	ELEMENT, HALL HW-105C	
H002	8-719-033-37	ELEMENT, HALL HW-105C	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-907-25	TRANSISTOR PT4850F	
Q002	8-729-907-25	TRANSISTOR PT4850F	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R001	1-216-817-11	METAL CHIP 470 5%	1/16W
R002	1-216-817-11	METAL CHIP 470 5%	1/16W
R003	1-216-817-11	METAL CHIP 470 5%	1/16W
R004	1-216-817-11	METAL CHIP 470 5%	1/16W

< SWITCH >

Ref. No.	Part No.	Description	Remark
S001	1-572-288-31	SWITCH, PUSH	
S002	1-692-614-11	SWITCH, PUSH (3 KEY)	

****

Ref. No.	Part No.	Description	Remark
*	A-7071-918-A	JK-109 BOARD, COMPLETE	

****

(Ref. No. 6,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C300	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C303	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C305	1-162-953-11	CERAMIC CHIP 100PF 5%	50V
C306	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V
C307	1-164-677-11	CERAMIC CHIP 0.033uF 10%	16V
C308	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V
C310	1-163-037-11	CERAMIC CHIP 0.022uF 10%	25V
C311	1-162-957-11	CERAMIC CHIP 220PF 5%	50V

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN300	1-580-055-21	PIN, CONNECTOR 2P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D300	8-719-040-56	DIODE 015Z8.2-TPH3	
D301	8-719-040-56	DIODE 015Z8.2-TPH3	
D302	8-719-040-56	DIODE 015Z8.2-TPH3	
D303	8-719-040-56	DIODE 015Z8.2-TPH3	
D304	8-719-404-46	DIODE MA110	
D305	8-719-404-46	DIODE MA110	
D306	8-719-040-56	DIODE 015Z8.2-TPH3	
D307	8-719-040-56	DIODE 015Z8.2-TPH3	
D308	8-719-040-56	DIODE 015Z8.2-TPH3	
D309	8-719-040-56	DIODE 015Z8.2-TPH3	
D310	8-719-040-56	DIODE 015Z8.2-TPH3	
D311	8-719-040-56	DIODE 015Z8.2-TPH3	

< JACK >

Ref. No.	Part No.	Description	Remark
J300	1-695-514-31	JACK (SMALL TYPE) 1P (AUDIO/VIDEO OUT)	
J301	1-695-514-11	JACK (SMALL TYPE) 1P (EARPHONE)	
J302	1-568-027-11	JACK, SMALL TYPE 1P (MIC)	
J303	1-563-454-11	JACK, MINIATURE (MIC DC OUT)	

< COIL >

Ref. No.	Part No.	Description	Remark
L300	1-410-993-11	INDUCTOR CHIP 1uH	
L301	1-410-993-11	INDUCTOR CHIP 1uH	
L302	1-412-979-21	INDUCTOR 1uH	
L303	1-412-979-21	INDUCTOR 1uH	
L304	1-412-979-21	INDUCTOR 1uH	
L306	1-410-993-11	INDUCTOR CHIP 1uH	

Ref.No.	Part No.	Description	Remark
L307	1-410-993-11	INDUCTOR CHIP 1uH	
		< TRANSISTOR >	
Q300	8-729-425-50	TRANSISTOR 2SB1462Q	
		< RESISTOR >	
R300	1-216-810-11	METAL CHIP 120 5% 1/16W	
R301	1-216-810-11	METAL CHIP 120 5% 1/16W	
R302	1-216-864-11	METAL CHIP 0 5% 1/16W	
R303	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R304	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R305	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R306	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R307	1-216-864-11	METAL CHIP 0 5% 1/16W	
R308	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R310	1-216-820-11	METAL CHIP 820 5% 1/16W	
R311	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R312	1-216-864-11	METAL CHIP 0 5% 1/16W	
		< FLEXIBLE BOARD >	
W300	1-650-018-11	FP-73 FLEXIBLE BOARD	
W301	1-650-020-11	FP-87 FLEXIBLE BOARD	

****

* A-7063-788-A MA-172 BOARD, COMPLETE

****

(Ref. No. 8,000 Series)

Ref.No.	Part No.	Description	Remark
		< CAPACITOR >	
C551	1-164-346-11	CERAMIC CHIP 1uF 16V	
C552	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C553	1-164-346-11	CERAMIC CHIP 1uF 16V	
C555	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C562	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C563	1-135-336-11	TANTAL. CHIP 47uF 20% 6.3V	
C564	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
		< CONNECTOR >	
CN550	1-691-483-21	CONNECTOR, FFC/FPC 4P	
		< DIODE >	
D550	8-719-977-34	DIODE DTZ12	
		< IC >	
IC550	8-759-822-37	IC LA7293M-TE-L	
		< TRANSISTOR >	
Q551	8-729-425-63	TRANSISTOR 2SB1463-RS(TXE)	
Q552	8-729-425-63	TRANSISTOR 2SB1463-RS(TXE)	
		< RESISTOR >	
R551	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R552	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R553	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R554	1-218-962-11	METAL GLAZE 5.6K 5% 1/16W	
R555	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R556	1-218-978-11	METAL GLAZE 120K 5% 1/16W	
R557	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R558	1-218-942-11	METAL GLAZE 120 5% 1/16W	
		< FLEXIBLE BOARD >	
W550	1-650-013-11	FP-35 FLEXIBLE BOARD	

****

* A-7053-791-A PD-42 BOARD, COMPLETE

****

(Ref. No. 2,000 Series)

Ref.No.	Part No.	Description	Remark
*	3-956-276-01	TERMINAL, LAMP	
*	3-956-277-01	CASE, SHIELD (L1)	
	3-957-541-01	SHEET, INSULATING, PD	
	3-957-626-01	PAPER, SHIELD (L3)	
		< CAPACITOR >	
C001	1-135-213-21	TANTAL. CHIP 3.3uF 20% 25V	
C002	1-135-091-91	TANTAL. CHIP 1uF 20% 16V	
C003	1-135-179-21	TANTAL. CHIP 2.2uF 20% 16V	
C004	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C005	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C006	1-164-001-11	CERAMIC CHIP 150PF 5% 50V	
C007	1-104-329-11	CERAMIC CHIP 0.1uF 10% 50V	
C008	1-164-357-11	CERAMIC CHIP 1000PF 5% 50V	
C009	1-164-363-11	CERAMIC CHIP 560PF 5% 50V	
C010	1-164-363-11	CERAMIC CHIP 560PF 5% 50V	
C011	1-104-329-11	CERAMIC CHIP 0.1uF 10% 50V	
C012	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C013	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C014	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C015	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C016	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C017	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C018	1-162-959-11	CERAMIC CHIP 330PF 5% 50V	
C019	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C020	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C023	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C024	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C025	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C026	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C027	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V	

Ref.No.	Part No.	Description			Remark
C028	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C029	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C030	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C031	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C032	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C033	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C034	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C035	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C036	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C037	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C038	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C039	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C040	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C041	1-162-975-11	CERAMIC CHIP	24PF	5%	50V
C042	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C043	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C044	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C045	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C046	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C047	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C048	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C049	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C050	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C052	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C053	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C054	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C055	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C056	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C057	1-135-239-11	TANTAL. CHIP	10uF	20%	10V
C058	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C059	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C100	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C102	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C103	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C104	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C105	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C106	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C107	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C108	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C109	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C110	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C111	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C112	1-135-212-21	TANTAL. CHIP	2.2uF	20%	25V
C113	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C114	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C115	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C116	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C117	1-135-229-11	TANTAL. CHIP	6.8uF	20%	6.3V
C118	1-135-229-11	TANTAL. CHIP	6.8uF	20%	6.3V
C119	1-164-505-11	CERAMIC CHIP	2.2uF		16V

Ref.No.	Part No.	Description			Remark
⚠C121	1-107-527-11	CERAMIC CHIP	27PF	10%	3KV
C123	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C125	1-107-561-11	FILM CHIP	0.01uF	5%	50V
C128	1-135-336-11	TANTAL. CHIP	47uF	20%	6.3V
C130	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C131	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C132	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C133	1-135-229-11	TANTAL. CHIP	6.8uF	20%	6.3V
C134	1-135-229-11	TANTAL. CHIP	6.8uF	20%	6.3V
C135	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C136	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C139	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C141	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C142	1-135-239-11	TANTAL. CHIP	10uF	20%	10V
C143	1-164-506-11	CERAMIC CHIP	4.7uF		16V

< DIODE >

D001	8-719-041-34	DIODE	015Z12-Y-TPH3
D002	8-719-041-10	DIODE	015Z9.1-Y-TPH3
D003	8-719-046-98	DIODE	1SS368-TPH3
D004	8-719-025-91	DIODE	MA365(E)
D005	8-719-040-56	DIODE	015Z8.2-TPH3
D006	8-719-040-56	DIODE	015Z8.2-TPH3
D100	8-719-989-33	DIODE	FC806
D101	8-719-989-03	DIODE	DAN222
D102	8-719-016-74	DIODE	1SS352
D102	8-719-404-46	DIODE	MA110

< IC >

IC001	8-759-198-05	IC	IR3P90Y6
IC002	8-759-198-04	IC	LZ93BA53
IC003	8-759-701-24	IC	NJM3414M
IC004	8-759-710-82	IC	NJM2406F
IC100	8-759-521-35	IC	TL5001CD
IC101	8-759-521-35	IC	TL5001CD

< COIL >

L001	1-412-955-11	INDUCTOR	22uH
L002	1-412-962-11	INDUCTOR	82uH
L003	1-412-031-11	INDUCTOR CHIP	47uH
L004	1-412-963-11	INDUCTOR	100uH
L100	1-412-031-11	INDUCTOR CHIP	47uH
L101	1-412-746-11	INDUCTOR CHIP	10uH
L102	1-412-963-11	INDUCTOR	100uH
L103	1-412-963-11	INDUCTOR	100uH
L104	1-412-963-11	INDUCTOR	100uH
L105	1-412-028-11	INDUCTOR CHIP	4.7uH
L106	1-424-674-11	COIL, CHOKE	22uH
L107	1-406-924-11	COIL, CHOKE	150uH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

PD-42

Ref.No.	Part No.	Description				Remark
		< TRANSISTOR >				
Q001	8-729-425-47	TRANSISTOR	XP4316			
Q002	8-729-015-17	TRANSISTOR	2SC4783-T1L5			
Q003	8-729-429-50	TRANSISTOR	XP4312			
Q003	8-729-429-22	TRANSISTOR	UN9215-QRS			
Q004	8-729-428-84	TRANSISTOR	UN9111			
Q100	8-729-804-41	TRANSISTOR	2SB1122-S			
Q101	8-729-425-64	TRANSISTOR	2SD2216Q			
Q102	8-729-429-18	TRANSISTOR	UN9213			
Q103	8-729-823-84	TRANSISTOR	FP102			
Q105	8-729-429-14	TRANSISTOR	UN9211			
Q106	8-729-821-55	TRANSISTOR	2SC3647S			
Q107	8-729-821-55	TRANSISTOR	2SC3647S			
Q108	8-729-429-18	TRANSISTOR	UN9213			
Q109	8-729-015-60	TRANSISTOR	2SJ316			
Q111	8-729-428-84	TRANSISTOR	UN9111			
		< RESISTOR >				
R001	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R002	1-218-975-11	METAL GLAZE	68K	5%	1/16W	
R003	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R004	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R005	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R006	1-218-963-11	METAL GLAZE	6.8K	5%	1/16W	
R007	1-218-963-11	METAL GLAZE	6.8K	5%	1/16W	
R008	1-218-975-11	METAL GLAZE	68K	5%	1/16W	
R009	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R010	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R011	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R012	1-216-818-11	METAL CHIP	560	5%	1/16W	
R013	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R014	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R015	1-218-975-11	METAL GLAZE	68K	5%	1/16W	
R016	1-218-989-11	METAL GLAZE	1M	5%	1/16W	
R017	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R018	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R019	1-218-989-11	METAL GLAZE	1M	5%	1/16W	
R020	1-218-968-11	METAL GLAZE	18K	5%	1/16W	
R021	1-218-976-11	METAL GLAZE	82K	5%	1/16W	
R022	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R023	1-218-978-11	METAL GLAZE	120K	5%	1/16W	
R024	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R025	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R026	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R027	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R028	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R029	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R030	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R031	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R032	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R033	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R034	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R035	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R036	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R037	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R038	1-218-967-11	METAL GLAZE	15K	5%	1/16W	
R039	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R040	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R041	1-218-974-11	METAL GLAZE	56K	5%	1/16W	
R044	1-218-975-11	METAL GLAZE	68K	5%	1/16W	
R045	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R046	1-218-976-11	METAL GLAZE	82K	5%	1/16W	
R047	1-218-975-11	METAL GLAZE	68K	5%	1/16W	
R048	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R051	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R054	1-218-976-11	METAL GLAZE	82K	5%	1/16W	
R055	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R056	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R057	1-218-964-11	METAL GLAZE	8.2K	5%	1/16W	
R058	1-218-962-11	METAL GLAZE	5.6K	5%	1/16W	
R059	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R060	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R061	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R062	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R064	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R064	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R065	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R066	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R067	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R068	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R069	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R070	1-218-946-11	METAL GLAZE	270	5%	1/16W	
R071	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R072	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R073	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R074	1-216-818-11	METAL CHIP	560	5%	1/16W	
R075	1-216-818-11	METAL CHIP	560	5%	1/16W	
R076	1-216-818-11	METAL CHIP	560	5%	1/16W	
R077	1-216-818-11	METAL CHIP	560	5%	1/16W	
R078	1-216-818-11	METAL CHIP	560	5%	1/16W	
R079	1-216-818-11	METAL CHIP	560	5%	1/16W	
R080	1-216-818-11	METAL CHIP	560	5%	1/16W	
R081	1-216-818-11	METAL CHIP	560	5%	1/16W	
R082	1-216-818-11	METAL CHIP	560	5%	1/16W	
R083	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R084	1-218-975-11	METAL GLAZE	68K	5%	1/16W	
R086	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R087	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R100	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R101	1-218-708-11	METAL CHIP	4.7K	0.50%	1/16W	

Ref. No.	Part No.	Description	Remark
R102	1-218-698-11	METAL CHIP 1.8K 0.50% 1/16W	
R103	1-216-813-11	METAL CHIP 220 5% 1/16W	
R104	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R105	1-216-846-11	METAL CHIP 120K 5% 1/16W	
R106	1-218-688-11	METAL CHIP 680 0.50% 1/16W	
R107	1-216-298-00	METAL CHIP 2.2 5% 1/10W	
R108	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R109	1-218-714-11	METAL CHIP 8.2K 0.50% 1/16W	
R110	1-218-722-11	METAL CHIP 18K 0.50% 1/16W	
R111	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R112	1-218-720-11	METAL CHIP 15K 0.50% 1/16W	
R114	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R115	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R116	1-218-313-11	METAL CHIP 560 0.50% 1/16W	
R117	1-218-704-11	METAL CHIP 3.3K 0.50% 1/16W	
R118	1-218-708-11	METAL CHIP 4.7K 0.50% 1/16W	
R119	1-216-813-11	METAL CHIP 220 5% 1/16W	
R121	1-216-812-11	METAL CHIP 180 5% 1/16W	
R124	1-216-864-11	METAL CHIP 0 5% 1/16W	
R125	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R126	1-218-752-91	METAL CHIP 330K 0.50% 1/10W	
R127	1-216-864-11	METAL CHIP 0 5% 1/16W	
R128	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R129	1-218-867-11	METAL CHIP 6.8K 0.50% 1/16W	
R132	1-218-688-11	METAL CHIP 680 0.50% 1/16W	
R133	1-218-289-11	METAL CHIP 510 0.50% 1/16W	
R134	1-216-864-11	METAL CHIP 0 5% 1/16W	
R135	1-216-864-11	METAL CHIP 0 5% 1/16W	
R136	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R137	1-216-833-11	METAL CHIP 10K 5% 1/16W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV001	1-238-224-11	RES, ADJ, CARBON 22K (COLOR)	
RV002	1-238-224-11	RES, ADJ, CARBON 22K (HUE)	
RV100	1-241-591-11	RES, ADJ, METAL GRAZE 1K	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T100	1-423-877-21	TRANSFORMER, CONVERTER	
⚠T101	1-423-869-11	TRANSFORMER, INVERTER	

< FLEXIBLE BOARD >

Ref. No.	Part No.	Description	Remark
W001	1-650-016-11	FP-63 FLEXIBLE BOARD	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X001	1-579-365-21	VIBRATOR, CRYSTAL (3.58MHz)	

****

Ref. No.	Part No.	Description	Remark
*	A-7063-790-A	SD-10 BOARD, COMPLETE	

****

(Ref. No. 2,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C200	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C201	1-164-346-11	CERAMIC CHIP 1uF 16V	
C202	1-164-346-11	CERAMIC CHIP 1uF 16V	
C203	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C204	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C205	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C206	1-135-336-11	TANTAL. CHIP 47uF 20% 6.3V	
C207	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C208	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C209	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C210	1-135-336-11	TANTAL. CHIP 47uF 20% 6.3V	
C211	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C212	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C213	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C216	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN201	1-691-550-11	PIN, CONNECTOR (1.5MM)(SMD) 3P	
CN202	1-691-518-11	CONNECTOR, BOARD TO BOARD 28P	
CN203	1-573-928-11	CONNECTOR, FFC/FPC (ZIF) 19P	
* CN205	1-580-055-21	PIN, CONNECTOR 2P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D200	8-719-989-79	LED AA1102W (CHARGE)	
D201	8-719-421-67	DIODE MA132WK	
D204	8-719-016-74	DIODE 1SS352	
D204	8-719-404-46	DIODE MA110	
D205	8-719-040-56	DIODE 015Z8.2-TPH3	

< IC >

Ref. No.	Part No.	Description	Remark
IC200	8-749-923-29	IC RS-20E-T	
IC201	8-759-234-77	IC TC4S66F	
IC202	8-759-701-02	IC NJM2073M	
IC203	8-759-046-84	IC NJM2070M	

< COIL >

Ref. No.	Part No.	Description	Remark
L200	1-414-081-11	INDUCTOR 33uH	
L201	1-412-060-11	INDUCTOR CHIP 22uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q200	8-729-429-18	TRANSISTOR UN9213	
Q201	8-729-429-18	TRANSISTOR UN9213	
Q202	8-729-425-64	TRANSISTOR 2SD2216Q	
Q204	8-729-425-64	TRANSISTOR 2SD2216Q	
Q208	8-729-024-39	TRANSISTOR 2SD1511-R	
Q209	8-729-922-87	TRANSISTOR 2SD1757K-RS	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R200	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R201	1-216-041-00	METAL CHIP	470	5%	1/10W	
R202	1-218-971-11	METAL GLAZE	33K	5%	1/16W	
R203	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R204	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R205	1-218-971-11	METAL GLAZE	33K	5%	1/16W	
R206	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R207	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R208	1-218-967-11	METAL GLAZE	15K	5%	1/16W	
R209	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R210	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R211	1-218-929-81	METAL GLAZE	10	5%	1/16W	
R212	1-218-962-11	METAL GLAZE	5.6K	5%	1/16W	
R213	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R214	1-218-951-11	METAL GLAZE	680	5%	1/16W	
R215	1-218-936-11	METAL GLAZE	39	5%	1/16W	
R216	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R217	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R219	1-218-963-11	METAL GLAZE	6.8K	5%	1/16W	
R221	1-218-964-11	METAL GLAZE	8.2K	5%	1/16W	
R222	1-218-956-11	METAL GLAZE	1.8K	5%	1/16W	
R223	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R224	1-218-974-11	METAL GLAZE	56K	5%	1/16W	
R229	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
R232	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R237	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R238	1-216-789-11	METAL CHIP	2.2	5%	1/16W	
R240	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R241	1-218-990-11	METAL GLAZE	0	5%	1/16W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV200	1-223-531-11	RES, VAR, CARBON 10K	

****

* A-7071-917-A SW-230 BOARD, COMPLETE
****
(Ref. No. 7,000 Series)

< DIODE >

Ref. No.	Part No.	Description		Remark
D301	8-719-040-56	DIODE	015Z8.2-TPH3	
D302	8-719-040-56	DIODE	015Z8.2-TPH3	
D303	8-719-040-56	DIODE	015Z8.2-TPH3	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R301	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S301	1-692-111-11	SWITCH, KEY BOARD (DATE (+))	
S302	1-692-111-11	SWITCH, KEY BOARD (TIME (NEXT))	
S303	1-692-111-11	SWITCH, KEY BOARD (LCD ON/OFF)	
S304	1-692-111-11	SWITCH, KEY BOARD (↪)	

< FLEXIBLE BOARD >

Ref. No.	Part No.	Description	Remark
W301	1-650-019-11	FP-74 FLEXIBLE BOARD	

****

* A-7071-920-A TL-41 BOARD, COMPLETE
****
(Ref. No. 5,000 Series)

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN751	1-580-055-21	PIN, CONNECTOR 2P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D651	8-719-951-20	LED BR1102W (TALLY)	

****

* A-7063-851-A VC-134 BOARD, COMPLETE
****
(Ref. No. 1,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C001	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C002	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C003	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C004	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C005	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C006	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C007	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C008	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C009	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C010	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C011	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C012	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C013	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C014	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C015	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C016	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C017	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C018	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C019	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C020	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C021	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C022	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C023	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C024	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C025	1-165-319-11	CERAMIC CHIP	0.1uF		50V

Ref.No.	Part No.	Description			Remark
C026	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C027	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C028	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C029	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C030	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C031	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C032	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C033	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C034	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C035	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C036	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C037	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C038	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C039	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C044	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C046	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C048	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C051	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C053	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C054	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C055	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C056	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C058	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C059	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C060	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C062	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C063	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C064	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C065	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C066	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C067	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C068	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C069	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C070	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C072	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C073	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C074	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C075	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C076	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C077	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C078	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C080	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C081	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C082	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C083	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C085	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C086	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C087	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C088	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C089	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C090	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C092	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C093	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C094	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C095	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C096	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C097	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C098	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C100	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C101	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C103	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C105	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C106	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C107	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C108	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C109	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C120	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C121	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C130	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C131	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C150	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C151	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C152	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C153	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C154	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C155	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C157	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C159	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C160	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C161	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C162	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C166	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C168	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C170	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C201	1-164-346-11	CERAMIC CHIP	1uF		16V
C202	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C203	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C204	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C205	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C206	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C207	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C208	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C209	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C210	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C212	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C213	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C214	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C217	1-164-346-11	CERAMIC CHIP	1uF		16V
C218	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C219	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V

VC-134

Ref. No.	Part No.	Description			Remark
C220	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C221	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C222	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C223	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C224	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C225	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C226	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C227	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C228	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C229	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C230	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C231	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C232	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C233	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C234	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C235	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C236	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C237	1-164-346-11	CERAMIC CHIP	1uF		16V
C238	1-164-346-11	CERAMIC CHIP	1uF		16V
C239	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C240	1-164-346-11	CERAMIC CHIP	1uF		16V
C241	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C242	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C243	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C244	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C245	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C246	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C247	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C248	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C249	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C250	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C251	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C252	1-164-346-11	CERAMIC CHIP	1uF		16V
C253	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C254	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C255	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C256	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C257	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C258	1-164-346-11	CERAMIC CHIP	1uF		16V
C259	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C260	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C261	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C262	1-164-346-11	CERAMIC CHIP	1uF		16V
C263	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C264	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C265	1-164-346-11	CERAMIC CHIP	1uF		16V
C266	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C267	1-164-346-11	CERAMIC CHIP	1uF		16V
C270	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C271	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remark
C272	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C273	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C274	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C275	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C302	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C304	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C305	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C307	1-135-163-21	TANTAL. CHIP	47uF	20%	4V
C311	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C313	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C314	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C316	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C318	1-135-072-21	TANTALUM CHIP	0.22uF	10%	35V
C319	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C320	1-164-346-11	CERAMIC CHIP	1uF		16V
C322	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C323	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C324	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C325	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C328	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C329	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C333	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C334	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C335	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C337	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C340	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C343	1-135-202-21	TANTAL. CHIP	22uF	20%	4V
C346	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C347	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C348	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C349	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C350	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C351	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C352	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C353	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C354	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C355	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C356	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C358	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C359	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C361	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C362	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C363	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C364	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C365	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C366	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C367	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C368	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C369	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C370	1-164-361-11	CERAMIC CHIP	0.047uF		16V

Ref.No.	Part No.	Description			Remark
C372	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C373	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C374	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C376	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C377	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C379	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C380	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C381	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C383	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C385	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C386	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C387	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C388	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C389	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C390	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C392	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C393	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C394	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C397	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C398	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C399	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C401	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C404	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C408	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C410	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C414	1-135-163-21	TANTAL. CHIP	47uF	20%	4V
C416	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C417	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C418	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C424	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C425	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C426	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C427	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C428	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C430	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C431	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C432	1-135-226-21	TANTAL. CHIP	0.68uF	20%	16V
C500	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C501	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C502	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C520	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C521	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C522	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C523	1-135-338-11	TANTAL. CHIP	220uF	20%	4V
C524	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C525	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C601	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C602	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C603	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C604	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C605	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C608	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C609	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C613	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C614	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C615	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C617	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C618	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C619	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C620	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C621	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C622	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C623	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C624	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C625	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C626	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C627	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C628	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C629	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C630	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C631	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C633	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C634	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C636	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C637	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C652	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C654	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C655	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C656	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C657	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C660	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C664	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C666	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C668	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C669	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C670	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C671	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C673	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C674	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C675	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C678	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C679	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C680	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C681	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C683	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C684	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C685	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C686	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C755	1-164-346-11	CERAMIC CHIP	1uF		16V
C759	1-162-971-11	CERAMIC CHIP	0.001uF		50V

VC-134

Ref. No.	Part No.	Description			Remark
C760	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C763	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C765	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C767	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C772	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C803	1-164-346-11	CERAMIC CHIP	1uF		16V
C804	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C805	1-164-346-11	CERAMIC CHIP	1uF		16V
C806	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C807	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C808	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C809	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C810	1-135-202-21	TANTAL. CHIP	22uF	20%	4V
C811	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C812	1-164-346-11	CERAMIC CHIP	1uF		16V
C813	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C814	1-135-336-11	TANTAL. CHIP	47uF	20%	6.3V
C815	1-135-161-21	TANTALUM CHIP	22uF	10%	10V
C816	1-135-336-11	TANTAL. CHIP	47uF	20%	6.3V
C817	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C818	1-135-161-21	TANTALUM CHIP	22uF	10%	10V
C819	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C821	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C823	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C824	1-135-163-21	TANTAL. CHIP	47uF	20%	4V
C826	1-164-346-11	CERAMIC CHIP	1uF		16V
C827	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C828	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C829	1-162-977-11	CERAMIC CHIP	0.0018uF	10%	50V
C830	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C831	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C832	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C833	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C834	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C835	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C836	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C839	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C840	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C841	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C880	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C881	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C901	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C904	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C905	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C906	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C908	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C909	1-135-217-21	TANTALUM CHIP	15uF	20%	6.3V
C910	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C911	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C912	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C913	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C914	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C915	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C916	1-164-346-11	CERAMIC CHIP	1uF		16V
C918	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
		< CONNECTOR >			
* CN001	1-691-922-11	CONNECTOR, BOARD TO BOARD 14P			
CN002	1-573-355-11	CONNECTOR, FFC/FPC 15P			
CN201	1-573-355-11	CONNECTOR, FFC/FPC 15P			
CN202	1-691-484-11	CONNECTOR, FFC/FPC 5P			
* CN203	1-580-055-21	PIN, CONNECTOR 2P			
CN204	1-573-921-11	CONNECTOR, FFC/FPC (ZIF) 12P			
CN205	1-691-519-11	CONNECTOR, BOARD TO BOARD 30P			
CN206	1-573-355-11	CONNECTOR, FFC/FPC 15P			
CN601	1-573-360-21	CONNECTOR, FFC/FPC 20P			
CN651	1-691-487-21	CONNECTOR, FFC/FPC 8P			
CN652	1-691-487-21	CONNECTOR, FFC/FPC 8P			
* CN902	1-573-351-11	CONNECTOR, FFC/FPC 11P			
CN903	1-573-368-11	CONNECTOR, FFC/FPC 28P			
CN904	1-573-355-11	CONNECTOR, FFC/FPC 15P			
		< TRIMMER >			
CT601	1-141-430-51	CAP, CHIP TRIMMER			
		< DIODE >			
D100	8-719-800-76	DIODE	1SS226		
D150	8-719-040-56	DIODE	015Z8.2-TPH3		
D151	8-719-040-56	DIODE	015Z8.2-TPH3		
D300	8-719-016-74	DIODE	1SS352		
D300	8-719-404-46	DIODE	MA110		
D301	8-719-043-70	DIODE	MA6S121		
D302	8-719-043-70	DIODE	MA6S121		
D400	8-719-421-67	DIODE	MA132WK		
D401	8-719-043-70	DIODE	MA6S121		
D402	8-719-421-67	DIODE	MA132WK		
D403	8-719-421-67	DIODE	MA132WK		
D601	8-719-016-74	DIODE	1SS352		
D601	8-719-404-46	DIODE	MA110		
D602	8-719-016-74	DIODE	1SS352		
D602	8-719-404-46	DIODE	MA110		
D603	8-719-016-74	DIODE	1SS352		
D603	8-719-404-46	DIODE	MA110		
D901	8-719-421-27	DIODE	MA728		
D902	8-719-023-31	DIODE	MA720		
		< FILTER >			
FL301	1-236-757-21	FILTER, LOW PASS (C)			
FL302	1-236-575-11	B.P.F (PAL-M)(4.32MHz)			
FL303	1-579-667-11	FILTER, CERAMIC			
FL305	1-236-146-11	FILTER, BAND PASS			

Ref. No.	Part No.	Description	Remark
FL651	1-239-766-11	FILTER, LOW PASS (4.77MHz)	
FL901	1-406-452-11	COIL, OSC	
		< IC >	
IC001	8-752-053-21	IC CXA1211M	
IC002	8-752-033-38	IC CXA1202R	
IC003	8-752-033-38	IC CXA1202R	
IC150	8-759-169-02	IC MB88344BPFV-G-BND-ER	
IC151	8-759-170-69	IC MC13400VMER	
IC201	8-759-823-90	IC LB8110M	
IC202	8-759-169-10	IC CXA1575N	
IC203	8-752-850-61	IC CXP80624A-023R	
IC204	8-759-059-42	IC CXA1481AR-E2	
IC205	8-759-059-05	IC TL1596CPW-ELM1000	
IC206	8-759-166-93	IC LB1843V-TLM	
IC300	8-752-351-22	IC CXL5502N	
IC301	8-752-065-54	IC CXA1207AR	
IC302	8-752-053-21	IC CXA1211M	
IC303	8-759-636-33	IC CXA1452N	
IC305	8-752-051-40	IC CXA1208R	
IC601	8-752-355-07	IC CXD1267N	
IC602	8-752-350-16	IC CXD1257AR	
IC603	8-752-053-26	IC CXA1399Q	
IC604	8-759-173-24	IC AD875JST-REEL	
IC651	8-759-044-79	IC AK6420F-E1	
IC653	8-759-182-81	IC SC406814FUMC68HC11M2	
IC654	8-759-064-36	IC MB88346BPFV	
IC656	8-759-180-77	IC CXD2133AR	
IC659	8-752-350-13	IC CXD2130R	
IC660	8-752-358-10	IC CXD2101BR	
IC754	8-759-058-41	IC NJM3416V	
IC755	8-759-059-03	IC LM324PW-ELL20	
IC800	8-759-043-81	IC CXA1488R-M	
IC802	8-759-710-86	IC NJM2233BM	
IC901	8-759-044-79	IC AK6420F-E1	
IC902	8-759-099-91	IC S-8420JF	
IC903	8-759-170-89	IC MB89092PFV-G-137A-BND	
IC904	8-759-168-42	IC uPD6461GS-606-GLG	
		< COIL >	
L001	1-412-033-11	INDUCTOR CHIP 220uH	
L002	1-412-058-11	INDUCTOR CHIP 10uH	
L004	1-412-060-11	INDUCTOR CHIP 22uH	
L005	1-412-066-21	INDUCTOR CHIP 220uH	
L006	1-412-058-11	INDUCTOR CHIP 10uH	
L008	1-412-060-11	INDUCTOR CHIP 22uH	
L009	1-412-066-21	INDUCTOR CHIP 220uH	
L011	1-410-655-31	INDUCTOR CHIP 120uH	
L012	1-412-280-31	INDUCTOR 330uH	
L013	1-412-950-11	INDUCTOR 8.2uH	
L015	1-412-058-11	INDUCTOR CHIP 10uH	
L016	1-412-957-11	INDUCTOR 33uH	
L017	1-412-280-31	INDUCTOR 330uH	
L018	1-412-282-41	INDUCTOR 470uH	
L019	1-410-657-21	INDUCTOR CHIP 180uH	
L050	1-412-058-11	INDUCTOR CHIP 10uH	
L100	1-410-657-21	INDUCTOR CHIP 180uH	
L101	1-410-387-11	INDUCTOR CHIP 33uH	
L103	1-410-381-11	INDUCTOR CHIP 10uH	
L150	1-412-031-11	INDUCTOR CHIP 47uH	
L151	1-412-026-11	INDUCTOR CHIP 1uH	
L152	1-412-026-11	INDUCTOR CHIP 1uH	
L153	1-412-026-11	INDUCTOR CHIP 1uH	
L201	1-412-062-11	INDUCTOR CHIP 47uH	
L202	1-412-064-11	INDUCTOR CHIP 100uH	
L302	1-410-389-31	INDUCTOR CHIP 47uH	
L303	1-412-058-11	INDUCTOR CHIP 10uH	
L305	1-410-390-11	INDUCTOR CHIP 56uH	
L306	1-412-949-21	INDUCTOR 6.8uH	
L307	1-410-385-11	INDUCTOR CHIP 22uH	
L308	1-412-959-11	INDUCTOR 47uH	
L309	1-410-390-11	INDUCTOR CHIP 56uH	
L310	1-410-390-11	INDUCTOR CHIP 56uH	
L311	1-410-656-11	INDUCTOR CHIP 150uH	
L312	1-410-391-11	INDUCTOR CHIP 68uH	
L314	1-410-656-11	INDUCTOR CHIP 150uH	
L315	1-412-963-11	INDUCTOR 100uH	
L316	1-412-955-11	INDUCTOR 22uH	
L317	1-412-963-11	INDUCTOR 100uH	
L318	1-414-260-11	INDUCTOR 22uH	
L320	1-412-058-11	INDUCTOR CHIP 10uH	
L330	1-412-058-11	INDUCTOR CHIP 10uH	
L520	1-412-058-11	INDUCTOR CHIP 10uH	
L601	1-412-963-11	INDUCTOR 100uH	
L602	1-412-029-11	INDUCTOR CHIP 10uH	
L603	1-412-029-11	INDUCTOR CHIP 10uH	
L604	1-412-029-11	INDUCTOR CHIP 10uH	
L623	1-412-979-21	INDUCTOR 1uH	
L651	1-414-078-11	INDUCTOR 10uH	
L653	1-414-078-11	INDUCTOR 10uH	
L655	1-414-078-11	INDUCTOR 10uH	
L656	1-414-078-11	INDUCTOR 10uH	
L659	1-414-078-11	INDUCTOR 10uH	
L661	1-412-961-11	INDUCTOR 68uH	
L663	1-414-117-11	INDUCTOR 1uH	
L664	1-412-979-21	INDUCTOR 1uH	
L665	1-412-979-21	INDUCTOR 1uH	
L666	1-414-117-11	INDUCTOR 1uH	
L667	1-414-117-11	INDUCTOR 1uH	
L800	1-414-259-11	INDUCTOR 18uH	

VC-134

Ref. No.	Part No.	Description	Remark
L801	1-412-058-11	INDUCTOR CHIP 10uH	
L902	1-412-031-11	INDUCTOR CHIP 47uH	
L903	1-412-058-11	INDUCTOR CHIP 10uH	
		< TRANSISTOR >	
Q001	8-729-428-84	TRANSISTOR UN9111	
Q002	8-729-425-50	TRANSISTOR 2SB1462Q	
Q003	8-729-425-50	TRANSISTOR 2SB1462Q	
Q005	8-729-425-50	TRANSISTOR 2SB1462Q	
Q006	8-729-429-18	TRANSISTOR UN9213	
Q007	8-729-823-86	TRANSISTOR 2SA1745	
Q008	8-729-823-86	TRANSISTOR 2SA1745	
Q009	8-729-425-64	TRANSISTOR 2SD2216Q	
Q010	8-729-429-18	TRANSISTOR UN9213	
Q011	8-729-425-50	TRANSISTOR 2SB1462Q	
Q012	8-729-425-64	TRANSISTOR 2SD2216Q	
Q017	8-729-425-50	TRANSISTOR 2SB1462Q	
Q018	8-729-425-73	TRANSISTOR 2SC4627-C	
Q019	8-729-429-18	TRANSISTOR UN9213	
Q021	8-729-823-86	TRANSISTOR 2SA1745	
Q022	8-729-425-50	TRANSISTOR 2SB1462Q	
Q023	8-729-823-86	TRANSISTOR 2SA1745	
Q025	8-729-429-18	TRANSISTOR UN9213	
Q027	8-729-425-50	TRANSISTOR 2SB1462Q	
Q028	8-729-425-64	TRANSISTOR 2SD2216Q	
Q029	8-729-425-64	TRANSISTOR 2SD2216Q	
Q030	8-729-429-18	TRANSISTOR UN9213	
Q100	8-729-428-88	TRANSISTOR UN9113	
Q101	8-729-425-73	TRANSISTOR 2SC4627-C	
Q102	8-729-425-64	TRANSISTOR 2SD2216Q	
Q103	8-729-428-88	TRANSISTOR UN9113	
Q130	8-729-425-64	TRANSISTOR 2SD2216Q	
Q150	8-729-425-50	TRANSISTOR 2SB1462Q	
Q151	8-729-429-18	TRANSISTOR UN9213	
Q152	8-729-425-64	TRANSISTOR 2SD2216Q	
Q153	8-729-425-64	TRANSISTOR 2SD2216Q	
Q154	8-729-429-50	TRANSISTOR XP4312	
Q155	8-729-425-50	TRANSISTOR 2SB1462Q	
Q157	8-729-427-70	TRANSISTOR XP4401	
Q158	8-729-427-45	TRANSISTOR XP4212	
Q159	8-729-427-70	TRANSISTOR XP4401	
Q160	8-729-101-07	TRANSISTOR 2SB798-DL	
Q161	8-729-429-18	TRANSISTOR UN9213	
Q201	8-729-429-14	TRANSISTOR UN9211	
Q202	8-729-429-32	TRANSISTOR UN9210-QRS	
Q203	8-729-427-16	TRANSISTOR RN2904-TE85L	
Q204	8-729-427-46	TRANSISTOR XP4213	
Q306	8-729-429-18	TRANSISTOR UN9213	
Q308	8-729-427-46	TRANSISTOR XP4213	
Q309	8-729-429-18	TRANSISTOR UN9213	

Ref. No.	Part No.	Description	Remark
Q310	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q312	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q313	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q315	8-729-428-88	TRANSISTOR UN9113	
Q317	8-729-425-50	TRANSISTOR 2SB1462Q	
Q319	8-729-425-50	TRANSISTOR 2SB1462Q	
Q320	8-729-425-64	TRANSISTOR 2SD2216Q	
Q321	8-729-425-64	TRANSISTOR 2SD2216Q	
Q323	8-729-425-50	TRANSISTOR 2SB1462Q	
Q324	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q325	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q328	8-729-425-50	TRANSISTOR 2SB1462Q	
Q330	8-729-429-18	TRANSISTOR UN9213	
Q331	8-729-429-18	TRANSISTOR UN9213	
Q332	8-729-425-64	TRANSISTOR 2SD2216Q	
Q333	8-729-425-64	TRANSISTOR 2SD2216Q	
Q334	8-729-425-50	TRANSISTOR 2SB1462Q	
Q335	8-729-425-64	TRANSISTOR 2SD2216Q	
Q336	8-729-429-18	TRANSISTOR UN9213	
Q338	8-729-425-64	TRANSISTOR 2SD2216Q	
Q350	8-729-427-46	TRANSISTOR XP4213	
Q351	8-729-429-96	TRANSISTOR 2SB1219A-R	
Q400	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q401	8-729-429-18	TRANSISTOR UN9213	
Q402	8-729-020-98	TRANSISTOR 2SC4997-TL	
Q403	8-729-429-18	TRANSISTOR UN9213	
Q404	8-729-429-18	TRANSISTOR UN9213	
Q405	8-729-425-50	TRANSISTOR 2SB1462Q	
Q410	8-729-429-50	TRANSISTOR XP4312	
Q410	8-729-429-22	TRANSISTOR UN9215-QRS	
Q411	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q420	8-729-425-64	TRANSISTOR 2SD2216Q	
Q505	8-729-425-64	TRANSISTOR 2SD2216Q	
Q506	8-729-425-64	TRANSISTOR 2SD2216Q	
Q603	8-729-427-74	TRANSISTOR XP4601	
Q656	8-729-427-74	TRANSISTOR XP4601	
Q657	8-729-427-70	TRANSISTOR XP4401	
Q752	8-729-425-64	TRANSISTOR 2SD2216Q	
Q800	8-729-429-50	TRANSISTOR XP4312	
Q800	8-729-429-22	TRANSISTOR UN9215-QRS	
Q801	8-729-429-50	TRANSISTOR XP4312	
Q801	8-729-429-22	TRANSISTOR UN9215-QRS	
Q880	8-729-427-70	TRANSISTOR XP4401	
Q881	8-729-428-51	TRANSISTOR XP6215	
Q882	8-729-429-50	TRANSISTOR XP4312	
Q882	8-729-429-22	TRANSISTOR UN9215-QRS	
Q883	8-729-429-50	TRANSISTOR XP4312	
Q883	8-729-429-22	TRANSISTOR UN9215-QRS	
Q884	8-729-429-18	TRANSISTOR UN9213	
Q885	8-729-429-50	TRANSISTOR XP4312	

Ref. No.	Part No.	Description				Remark
Q885	8-729-429-22	TRANSISTOR	UN9215-QRS			
Q901	8-729-427-74	TRANSISTOR	XP4601			
Q902	8-729-428-88	TRANSISTOR	UN9113			
		< RESISTOR >				
R002	1-218-955-11	METAL GLAZE	1.5K	5%	1/16W	
R003	1-218-938-11	METAL GLAZE	56	5%	1/16W	
R004	1-218-946-11	METAL GLAZE	270	5%	1/16W	
R005	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R006	1-218-964-11	METAL GLAZE	8.2K	5%	1/16W	
R007	1-218-935-11	METAL GLAZE	33	5%	1/16W	
R008	1-218-945-11	METAL GLAZE	220	5%	1/16W	
R009	1-218-971-11	METAL GLAZE	33K	5%	1/16W	
R010	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R011	1-218-967-11	METAL GLAZE	15K	5%	1/16W	
R012	1-218-958-11	METAL GLAZE	2.7K	5%	1/16W	
R014	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R017	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R018	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R019	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R020	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R021	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R022	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R023	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R024	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R025	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R026	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R027	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R028	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R030	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R031	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R032	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R033	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R035	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R036	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R039	1-216-791-11	METAL CHIP	3.3	5%	1/16W	
R045	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R048	1-216-791-11	METAL CHIP	3.3	5%	1/16W	
R049	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R050	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R052	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R054	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R055	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R056	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R057	1-218-968-11	METAL GLAZE	18K	5%	1/16W	
R058	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R059	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R060	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R061	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R064	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R065	1-218-941-11	METAL GLAZE	100	5%	1/16W	
R066	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R067	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R068	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R072	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R075	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R077	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R079	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R080	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R082	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R086	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R087	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R088	1-218-956-11	METAL GLAZE	1.8K	5%	1/16W	
R089	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R090	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R091	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R092	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R093	1-218-945-11	METAL GLAZE	220	5%	1/16W	
R094	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R098	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R099	1-218-944-11	METAL GLAZE	180	5%	1/16W	
R100	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R102	1-218-955-11	METAL GLAZE	1.5K	5%	1/16W	
R103	1-218-952-11	METAL GLAZE	820	5%	1/16W	
R104	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R105	1-218-966-11	METAL GLAZE	12K	5%	1/16W	
R106	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R107	1-218-940-11	METAL GLAZE	82	5%	1/16W	
R109	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R110	1-218-956-11	METAL GLAZE	1.8K	5%	1/16W	
R111	1-218-955-11	METAL GLAZE	1.5K	5%	1/16W	
R112	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R113	1-218-968-11	METAL GLAZE	18K	5%	1/16W	
R114	1-218-968-11	METAL GLAZE	18K	5%	1/16W	
R115	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R116	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R117	1-218-955-11	METAL GLAZE	1.5K	5%	1/16W	
R119	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R120	1-216-296-00	METAL CHIP	0	5%	1/8W	
R130	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R150	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R151	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R152	1-218-952-11	METAL GLAZE	820	5%	1/16W	
R153	1-218-947-11	METAL GLAZE	330	5%	1/16W	
R154	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R155	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R156	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R157	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R158	1-218-970-11	METAL GLAZE	27K	5%	1/16W	
R159	1-218-969-11	METAL GLAZE	22K	5%	1/16W	

VC-134

Ref. No.	Part No.	Description				Remark
R160	1-218-945-11	METAL GLAZE	220	5%	1/16W	
R161	1-218-960-11	METAL GLAZE	3.9K	5%	1/16W	
R162	1-218-945-11	METAL GLAZE	220	5%	1/16W	
R163	1-218-963-11	METAL GLAZE	6.8K	5%	1/16W	
R164	1-218-954-11	METAL GLAZE	1.2K	5%	1/16W	
R165	1-218-970-11	METAL GLAZE	27K	5%	1/16W	
R166	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R167	1-216-791-11	METAL CHIP	3.3	5%	1/16W	
R170	1-218-960-11	METAL GLAZE	3.9K	5%	1/16W	
R172	1-218-960-11	METAL GLAZE	3.9K	5%	1/16W	
R174	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R175	1-218-970-11	METAL GLAZE	27K	5%	1/16W	
R176	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R177	1-218-945-11	METAL GLAZE	220	5%	1/16W	
R179	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R180	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R181	1-216-864-11	METAL CHIP	0	5%	1/16W	
R182	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R185	1-216-296-00	METAL CHIP	0	5%	1/8W	
R186	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R191	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R192	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R201	1-216-019-00	METAL CHIP	56	5%	1/10W	
R202	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R203	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R204	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R205	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R206	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R207	1-218-989-11	METAL GLAZE	1M	5%	1/16W	
R208	1-218-989-11	METAL GLAZE	1M	5%	1/16W	
R209	1-218-971-11	METAL GLAZE	33K	5%	1/16W	
R210	1-218-970-11	METAL GLAZE	27K	5%	1/16W	
R211	1-218-984-11	METAL GLAZE	390K	5%	1/16W	
R212	1-218-971-11	METAL GLAZE	33K	5%	1/16W	
R213	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R214	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R215	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R216	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R217	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R218	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R219	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R221	1-217-671-11	METAL CHIP	1	5%	1/10W	
R222	1-217-671-11	METAL CHIP	1	5%	1/10W	
R223	1-217-671-11	METAL CHIP	1	5%	1/10W	
R224	1-218-940-11	METAL GLAZE	82	5%	1/16W	
R225	1-218-698-11	METAL CHIP	1.8K	0.50%	1/16W	
R226	1-216-804-11	METAL CHIP	39	5%	1/16W	
R227	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R228	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R229	1-218-953-11	METAL GLAZE	1K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R230	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R231	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R232	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R233	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R234	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R235	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R236	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R239	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R240	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R241	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R243	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R244	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R245	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R246	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R247	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R248	1-218-958-11	METAL GLAZE	2.7K	5%	1/16W	
R249	1-218-963-11	METAL GLAZE	6.8K	5%	1/16W	
R250	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R251	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R252	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R253	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R254	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R255	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R256	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R257	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R258	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R259	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R260	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R261	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R262	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R263	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R264	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R265	1-218-981-11	METAL GLAZE	220K	5%	1/16W	
R266	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R267	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R268	1-218-984-11	METAL GLAZE	390K	5%	1/16W	
R269	1-218-989-11	METAL GLAZE	1M	5%	1/16W	
R270	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R271	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R272	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R273	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R274	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R275	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R276	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R277	1-218-941-11	METAL GLAZE	100	5%	1/16W	
R278	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R279	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R280	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R281	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R282	1-218-965-11	METAL GLAZE	10K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R283	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R284	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R285	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R286	1-218-958-11	METAL GLAZE	2.7K	5%	1/16W	
R289	1-217-671-11	METAL CHIP	1	5%	1/10W	
R290	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R292	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R293	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R315	1-218-968-11	METAL GLAZE	18K	5%	1/16W	
R316	1-218-971-11	METAL GLAZE	33K	5%	1/16W	
R319	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R320	1-218-740-11	METAL CHIP	100K	0.50%	1/16W	
R321	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R322	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R323	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R325	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R326	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R336	1-218-989-11	METAL GLAZE	1M	5%	1/16W	
R337	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R338	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R339	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R340	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R342	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R346	1-218-976-11	METAL GLAZE	82K	5%	1/16W	
R347	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R348	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R349	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R352	1-218-952-11	METAL GLAZE	820	5%	1/16W	
R353	1-218-951-11	METAL GLAZE	680	5%	1/16W	
R354	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R355	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R356	1-216-296-00	METAL CHIP	0	5%	1/8W	
R357	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R358	1-218-941-11	METAL GLAZE	100	5%	1/16W	
R359	1-218-694-11	METAL CHIP	1.2K	0.50%	1/16W	
R360	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R368	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R373	1-218-704-11	METAL CHIP	3.3K	0.50%	1/16W	
R377	1-218-974-11	METAL GLAZE	56K	5%	1/16W	
R378	1-218-971-11	METAL GLAZE	33K	5%	1/16W	
R379	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R380	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R381	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R383	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R384	1-218-952-11	METAL GLAZE	820	5%	1/16W	
R385	1-218-952-11	METAL GLAZE	820	5%	1/16W	
R386	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R387	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R388	1-216-817-11	METAL CHIP	470	5%	1/16W	
R389	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R390	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R391	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R392	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R393	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R394	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R395	1-218-946-11	METAL GLAZE	270	5%	1/16W	
R398	1-218-946-11	METAL GLAZE	270	5%	1/16W	
R399	1-218-941-11	METAL GLAZE	100	5%	1/16W	
R400	1-218-941-11	METAL GLAZE	100	5%	1/16W	
R401	1-218-952-11	METAL GLAZE	820	5%	1/16W	
R402	1-218-952-11	METAL GLAZE	820	5%	1/16W	
R404	1-218-954-11	METAL GLAZE	1.2K	5%	1/16W	
R405	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R406	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R407	1-218-945-11	METAL GLAZE	220	5%	1/16W	
R408	1-218-958-11	METAL GLAZE	2.7K	5%	1/16W	
R409	1-218-952-11	METAL GLAZE	820	5%	1/16W	
R412	1-218-960-11	METAL GLAZE	3.9K	5%	1/16W	
R414	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R416	1-218-960-11	METAL GLAZE	3.9K	5%	1/16W	
R417	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R418	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R419	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R421	1-218-958-11	METAL GLAZE	2.7K	5%	1/16W	
R422	1-218-956-11	METAL GLAZE	1.8K	5%	1/16W	
R424	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R425	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R426	1-218-954-11	METAL GLAZE	1.2K	5%	1/16W	
R428	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R430	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R432	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R435	1-218-950-11	METAL GLAZE	560	5%	1/16W	
R436	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R439	1-218-954-11	METAL GLAZE	1.2K	5%	1/16W	
R441	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R444	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R445	1-218-954-11	METAL GLAZE	1.2K	5%	1/16W	
R450	1-218-740-11	METAL CHIP	100K	0.50%	1/16W	
R451	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R457	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R469	1-218-959-11	METAL GLAZE	3.3K	5%	1/16W	
R470	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R471	1-218-963-11	METAL GLAZE	6.8K	5%	1/16W	
R472	1-218-962-11	METAL GLAZE	5.6K	5%	1/16W	
R475	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R477	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R478	1-218-945-11	METAL GLAZE	220	5%	1/16W	
R500	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R501	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R502	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	

VC-134

Ref. No.	Part No.	Description	Remark
R509	1-216-296-00	METAL CHIP 0 5% 1/8W	
R511	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R515	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R516	1-218-948-11	METAL GLAZE 390 5% 1/16W	
R517	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R520	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R521	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R522	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R523	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R524	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R526	1-218-936-11	METAL GLAZE 39 5% 1/16W	
R527	1-218-935-11	METAL GLAZE 33 5% 1/16W	
R528	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R529	1-218-968-11	METAL GLAZE 18K 5% 1/16W	
R531	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R532	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R533	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R538	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R539	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R541	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R602	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R603	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R607	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R608	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R609	1-218-721-11	METAL CHIP 16K 0.50% 1/16W	
R609	1-218-876-11	METAL CHIP 16K 0.50% 1/16W	
R610	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R610	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R611	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R612	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R614	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R615	1-216-864-11	METAL CHIP 0 5% 1/16W	
R616	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R617	1-218-937-11	METAL GLAZE 47 5% 1/16W	
R618	1-218-964-11	METAL GLAZE 8.2K 5% 1/16W	
R619	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R622	1-218-939-11	METAL GLAZE 68 5% 1/16W	
R652	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R657	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R658	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R659	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R660	1-218-937-11	METAL GLAZE 47 5% 1/16W	
R661	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R664	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R671	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R672	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R676	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R677	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R678	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R682	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R684	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R685	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R686	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R687	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R689	1-218-947-11	METAL GLAZE 330 5% 1/16W	
R690	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R691	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R692	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R693	1-218-966-11	METAL GLAZE 12K 5% 1/16W	
R694	1-218-966-11	METAL GLAZE 12K 5% 1/16W	
R695	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R696	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R697	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R698	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R699	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	
R700	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R701	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R702	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R705	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R708	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R711	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R751	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R758	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R759	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R762	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R763	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R764	1-218-983-11	METAL GLAZE 330K 5% 1/16W	
R767	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R769	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R770	1-218-980-11	METAL GLAZE 180K 5% 1/16W	
R772	1-218-980-11	METAL GLAZE 180K 5% 1/16W	
R773	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R774	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R778	1-218-987-11	METAL GLAZE 680K 5% 1/16W	
R784	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R785	1-218-952-11	METAL GLAZE 820 5% 1/16W	
R788	1-218-957-11	METAL GLAZE 2.2K 5% 1/16W	
R800	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R802	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R803	1-218-990-11	METAL GLAZE 0 5% 1/16W	
R804	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R806	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R807	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R808	1-218-963-11	METAL GLAZE 6.8K 5% 1/16W	
R809	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R811	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R813	1-218-954-11	METAL GLAZE 1.2K 5% 1/16W	
R814	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R815	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R817	1-218-983-11	METAL GLAZE 330K 5% 1/16W	

Ref.No.	Part No.	Description				Remark
R819	1-218-981-11	METAL GLAZE	220K	5%	1/16W	
R821	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R822	1-220-398-11	METAL GLAZE	1.5M	5%	1/16W	
R823	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R824	1-218-983-11	METAL GLAZE	330K	5%	1/16W	
R826	1-218-964-11	METAL GLAZE	8.2K	5%	1/16W	
R827	1-218-981-11	METAL GLAZE	220K	5%	1/16W	
R828	1-218-954-11	METAL GLAZE	1.2K	5%	1/16W	
R829	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R830	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R832	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R833	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R835	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R836	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R839	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R847	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R848	1-216-864-11	METAL CHIP	0	5%	1/16W	
R850	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R851	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R852	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R853	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R854	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R855	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R856	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R857	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R858	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R859	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R860	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R861	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R862	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R863	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R864	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R865	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R866	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R867	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R868	1-218-704-11	METAL CHIP	3.3K	0.50%	1/16W	
R881	1-218-954-11	METAL GLAZE	1.2K	5%	1/16W	
R882	1-218-975-11	METAL GLAZE	68K	5%	1/16W	
R883	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R884	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R885	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R886	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R887	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R888	1-218-954-11	METAL GLAZE	1.2K	5%	1/16W	
R901	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R902	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R903	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R904	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R907	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R908	1-218-953-11	METAL GLAZE	1K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R909	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R910	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R911	1-218-951-11	METAL GLAZE	680	5%	1/16W	
R912	1-218-949-11	METAL GLAZE	470	5%	1/16W	
R913	1-218-983-11	METAL GLAZE	330K	5%	1/16W	
R914	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R915	1-218-740-11	METAL CHIP	100K	0.50%	1/16W	
R916	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R917	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R918	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R919	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R920	1-218-957-11	METAL GLAZE	2.2K	5%	1/16W	
R921	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R922	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R925	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R926	1-218-977-11	METAL GLAZE	100K	5%	1/16W	
R927	1-218-951-11	METAL GLAZE	680	5%	1/16W	
R928	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R929	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R931	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R932	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R933	1-218-951-11	METAL GLAZE	680	5%	1/16W	
R934	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R935	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R936	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R937	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R938	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R939	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R940	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R941	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R942	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R943	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R944	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R946	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R947	1-218-953-11	METAL GLAZE	1K	5%	1/16W	
R948	1-218-990-11	METAL GLAZE	0	5%	1/16W	
R949	1-218-990-11	METAL GLAZE	0	5%	1/16W	

< NETWORK >

RB905	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB906	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB910	1-236-412-11	NETWORK, RES 1.0K
RB911	1-236-412-11	NETWORK, RES 1.0K

< VARIABLE RESISTOR >

RV300	1-241-591-11	RES, ADJ, METAL GRAZE 1K

< FLEXIBLE BOARD >

W150	1-650-012-11	FP-33 FLEXIBLE BOARD

Ref. No.	Part No.	Description	Remark
		< VIBRATOR >	
X201	1-579-670-11	VIBRATOR, CRYSTAL (11.89MHz)	
X300	1-579-365-21	VIBRATOR, CRYSTAL (3.58MHz)	
X601	1-579-619-11	VIBRATOR, CRYSTAL (28.6363MHz)	
X651	1-579-669-11	VIBRATOR, LITIUM NIOBATE (10MHz)	
X901	1-579-550-11	VIBRATOR, CRYSTAL (32kHz)	
		< VIBRATOR >	
XTL901	1-579-369-21	VIBRATOR (10MHz)	

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
⚠3	1-517-245-11	TUBE, FLUORESCENT, COLD CATHODE	
7	1-467-479-11	PLATE, LIGHT GUIDE BLOCK	
8	1-810-328-11	DISPLAY MODULE, LIQUID CRYSTAL	
*⚠21	1-528-476-11	BATTERY, LITHIUM (CR2477)	
25	1-467-374-11	SWITCH BLOCK, CONTROL (CF-36 BOARD)	
61	1-467-375-21	SWITCH BLOCK, CONTROL (FK-60 BOARD)	
75	1-537-618-11	TERMINAL BOARD, BATTERY	
114	1-547-636-11	FILTER BLOCK, OPTICAL	
831	A-7049-219-A	MOTOR BLOCK ASSY (ROTOR)	
832	A-7049-564-A	MOTOR BLOCK ASSY (STATOR)	
M301	1-542-215-21	MICROPHONE, CAP (KXM1235-010020)	
M901	A-7048-684-A	DRUM ASSY (DGH-0A5A-R)	
M902	8-835-498-01	MOTOR, DC SCE-0401A (CAPSTAN)	
M903	X-3943-127-1	MOTOR ASSY, L (LOADING)	
M904	3-708-812-01	IRIS UNIT	
S001	1-572-288-31	SWITCH, PUSH (C.C. LOCK)	
S002	1-692-614-11	SWITCH, PUSH (3 KEY)(REC PROOF, ME/MP)	
SP201	1-544-033-21	SPEAKER	
W001	1-650-016-11	FP-63 FLEXIBLE BOARD	
W300	1-650-018-11	FP-73 FLEXIBLE BOARD	
W301	1-650-020-11	FP-87 FLEXIBLE BOARD	
W301	1-650-019-11	FP-74 FLEXIBLE BOARD	
W150	1-650-012-11	FP-33 FLEXIBLE BOARD	
W550	1-650-013-11	FP-35 FLEXIBLE BOARD	

****

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	1-467-407-11	ADAPTOR, RFU	
	1-467-429-21	REMOTE COMMANDER (CAM CODER)(RMT-705)	
	1-696-713-11	CORD, CONNECTION	
	1-751-645-11	CORD, CONNECTION	
	3-708-412-01	COVER BATTERY, REMOCON	
	3-757-728-21	MANUAL, INSTRUCTION (ENGLISH)	
*	3-757-728-31	MANUAL, INSTRUCTION (ENGLISH, FRENCH)	
	3-758-023-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH)	
	3-758-023-41	MANUAL, INSTRUCTION (CHINESE)	
*	3-795-581-21	SAFEGUARD (SONY), IMPORTANT (US)	
	3-956-274-01	STRAP, LIST	
	3-956-278-01	HOOD	
	3-956-563-01	CLEANER, LCD	
*	3-956-708-01	INDIVIDUAL CARTON (US:METALIC GRAY, CND)	
*	3-956-708-11	INDIVIDUAL CARTON (US:PEARL WHITE)	
*	3-956-708-21	INDIVIDUAL CARTON (E)	
*	3-956-709-01	CUSHION (LOWER)	
*	3-956-710-01	CUSHION, ACC	
	X-3943-641-1	STAND ASSY	
**	AC-V505	AC POWER ADAPTOR	
***	NP-500	BATTERY PACK	
***	CR2025	LITHIUM BATTERY (REMOTE COMMANDER)	

Note.
** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

Be sure to read "Note on the CCD Imager replacement" on page 67 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

SECTION 7
INTERFACES • IC PIN FUNCTIONS

7-1. CAMERA MICRO PROCESSOR (VC-134 BOARD IC653: SC406814FUMC68HC11M2) PIN FUNCTIONS

Pin No.	Signal Name	I/O	Function
1	DATA TO SLAVE	I	Serial data input from mode control micro processor (VC-134 board IC203).
2	$\overline{\text{VTR SCK}}$	I	Serial data transfer clock for mode control micro processor.
3	CAM $\overline{\text{CS}}$	I	Chip select signal from mode control micro processor.
4			Not used. Connected to +5V.
5			Not used. (open)
6			
7			
8			
9	VD	I	V SYNC from SYNC generator (VC-134 board IC660).
10	AJST	I	Adjusting timing pulse input from SYNC generator. Normally "H".
11			Not used. Connected to +5V.
12	VDD		+5V power supply.
13	VSS		GND
14			Not used. (open)
15			
16			
17	WEN	I	Write enable signal from timing generator (IC602 of VC-134 board). Normally "H".
18			Not used. (open)
19			
20			
21	EEPROM BUSY	I	BUSY signal from EEPROM (VC-134 board IC651). Normally "H". "L" pulse during data reading/writing.
22			Not used. (open)
23	IRIS PWM	O	Iris control signal. 16 msec (NTSC), 20 msec (PAL). Cycle PWM signal.
24			Not used. (open)
25			
26			
27			
28			Not used. Connected to +5V.
29			
30	XIRQ		Connected to +5V.
31	VDD		+5V power supply.
32	VSS		GND
33			Not used. (open)
34			
35			
36	$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
37	CAM SO	O	Serial data output.
38	CAM SI	I	Serial data input.
39			Not used. (open)
40			
41	VDD		+5V power supply.
42			Not used.
43			Not used. Connected to GND.
44			
45			
46			
47			
48	ZM MODE	I	Not used.
49	HALL A/D	I	Hall voltage. Approx. 1V (iris open) to approx. 3.6V (iris close).
50	VRL	I	A/D port reference voltage (LOW). Connected to GND.
51	VRH	I	A/D port reference voltage (HIGH). Connected to +5V.
52	VSS		GND
53	$\overline{\text{AF COSMO RST}}$	O	Not used. (open)
54			
55			
56	EEPROM LOCK	O	EEPROM (VC-134 board IC651) writing prohibition signal. Normally "H".
57	$\overline{\text{OPD RESET}}$	O	Reset signal to OPD (VC-134 board IC656). "H" in camera mode, "L" in VTR mode.
58			Not used. (open)
59	$\overline{\text{CAM ON}}$	O	A/D converter (VC-134 board IC604) on/off signal. Normally "L".
60	$\overline{\text{NTSC}}$	O	NTSC: "L", PAL: "H".
61	IRQ		Connected to +5V.
62	$\overline{\text{CS}}$ TG	O	Chip select signal to timing generator (VC-134 board IC602).
63	$\overline{\text{CS}}$ CORE	O	Chip select signal to camera core (VC-134 board IC659).
64	$\overline{\text{CS}}$ CAM OPD	O	Chip select signal to OPD (VC-134 board IC656).
65	$\overline{\text{CS}}$ CAM D/A	O	Strobe signal to camera section EVR (VC-134 board IC654).
66	$\overline{\text{CS}}$ EEPROM	O	Chip select signal to EEPROM (VC-134 board IC651).
67	$\overline{\text{CS}}$ AF	O	Chip select signal to OPD (VC-134 board IC656).
68			Not used. (open)
69	$\overline{\text{CORE RESET}}$		Reset signal to camera core (VC-134 board IC659). Normally "H". "L" when reset.
70	VSS		GND
71	VDD		+5V power supply.
72			Not used. (open)
73	EXTAL	I	16 MHz clock oscillation circuit.
74	XTAL	O	
75	$\overline{\text{RESET}}$	I	Reset signal from mode control micro processor (VC-134 board IC903). Normally "H". "L" when reset.
76	MODB		Connected to +5V.
77	MODA		Connected to GND.
78	RXD		Not used. (open)
79	TXD		
80	DATA TO MSTR	O	Serial data output to mode control micro processor (VC-134 board IC903).

7-2. OPD (VC-134 BOARD IC656: CXD2133AR) PIN FUNCTIONS

Pin No.	Signal Name	I/O	Function
1	TSELOUT2	I	Test input pin. Normally "L".
2	VDD	–	Power supply pin. (+4V)
3	TPO0	O	Test output pin. Normally open.
4	TPO1	O	Test output pin. Normally open.
5	TPO2	O	Test output pin. Normally open.
6	TPO3	O	Test output pin. Normally open.
7	TPO4	O	Test output pin. Normally open.
8	TPO5	O	Test output pin. Normally open.
9	TPO6	O	Test output pin. Normally open.
10	TPO7	O	Test output pin. Normally open.
11	TPO8	O	Test output pin. Normally open.
12	TPO9	O	Test output pin. Normally open.
13	TPOA	O	Test output pin. Normally open.
14	TPOB	O	Test output pin. Normally open.
15	Vss	–	GND.
16	TINT	I	Test input pin. Normally "L".
17	VDD	–	Power supply pin. (+4V)
18	NABS	I	AF detection format selection pin. L: Two waves. H: One wave.
19	AWBG	I	AWB external input pin.
20	DELAYOFF	I	DISP (21 PIN) signal delay amount control pin. L: Delay. H: No delay.
21	DISP	O	Display signal output pin.
22	Vss	–	GND.
23	DISSEL3	I	Display output signal select pin.
24	DISSEL2	I	
25	DISSEL1	I	
26	DISSEL0	I	
27	$\overline{\text{CAM SCK}}$	I	AE/AWB serial clock input pin.
28	OPD SO	O	AE/AWB serial output pin.
29	OPD SI	I	AE/AWB serial input pin.
30	$\overline{\text{CS}}$ CAM OPD	I	AE/AWB chip select pin.
31	VDD	–	Power supply pin. (+4V)
32	$\overline{\text{AF SCK}}$	I	AF data output serial clock input pin.
33	AF OPD SO	O	AF data output serial output pin.
34	AF OPD SI	I	AF data output serial input pin.
35	$\overline{\text{CS}}$ AF OPD	I	AF data output chip select pin.
36	$\overline{\text{OPD RESET}}$	I	Reset pin. L: Resets. H: Operates.
37	AFBUSY	O	Not used.
38	IVAFBUSY	I	BUSY flag polarity selection pin during AF operations. Normally "L".
39	Vss	–	GND.
40	E ZOOM	I	Electronic zoom mode select pin. Normally "L".

Pin No.	Signal Name	I/O	Function
41	VDD	–	Power supply pin. (+4V)
42	TSELIN1	I	Test input pin. Normally "L".
43	TSELIN0	I	Test input pin. Normally "L".
44	$\overline{\text{NT}}$/PAL	I	NTSC/PAL selection pin. L: NTSC. H: PAL.
45	$\overline{\text{760}}$/510	I	760H/510H selection pin. L: 760H. H: 510H.
46	TSWO	O	Test output pin. Normally open.
47	TSVW	I	Test input pin. Normally "L".
48	TSHW	I	Test input pin. Normally "L".
49	TSCK	I	Test input pin. Normally "L".
50	IVCLP	I	CLP1 input phase selection pin. L: Rising edge of MCK. H: Falling edge of MCK.
51	CLP1	I	Digital clamp pulse input pin.
52	Vss	–	GND.
53	HCL	O	Test output pin. Normally open.
54	VDD	–	Power supply pin. (+4V)
55	CL	I	Clock input pin. 910 fH (NTSC). 908 fH (PAL).
56	IVIN	I	Input signal input phase selection pin. L: Falling edge of MCK. H: Falling edge of MCK.
57	MCK	I	Main clock input pin. 1820/3 fH (NTSC). 1816/3 fH (PAL).
58	IVID	I	AWB ID polarity selection pin.
59	ID	I	AWB ID input pin.
60	Vss	–	GND.
61			NC pin.
62	VDD	–	3V power supply pin. Connected to +4V.
63	HD	I	HD input pin.
64	VD	I	VD input pin.
65	VDD	–	3V power supply pin. Connected to +4V.
66	AD0	I	A/D signal input pin.
67	AD1	I	A/D signal input pin.
68	AD2	I	A/D signal input pin.
69	AD3	I	A/D signal input pin.
70	AD4	I	A/D signal input pin.
71	AD5	I	A/D signal input pin.
72	AD6	I	A/D signal input pin.
73	AD7	I	A/D signal input pin.
74	AD8	I	A/D signal input pin.
75	AD9	I	A/D signal input pin.
76	TADA	I	Test input pin. Normally "L".
77	TADB	I	Test input pin. Normally "L".
78	TSELOUT0	I	Test input pin. Normally "L".
79	Vss	–	GND.
80	TSELOUT1	I	Test input pin. Normally "L".

7-3. CAMERA CORE (VC-134 BOARD IC660: CXD2101BR) PIN FUNCTIONS

Pin No.	Signal Name	I/O	Function
1	HHLD	O	Outputs size and timing of MOSAIC of CXD2130. Size is set by HHD0-5 and VHD0-5 of serial data. But if HOLD is set to 0, HHLD=VHLD=1.
2	VHLD	O	
3	CVOW	O	Outputs CXD2130 data display signal. CVOW is character signal and CVOB is hem signal. But if CAMC is set to 0, CVOW=CVOB=0. (ACTIVE HIGH)
4	CVOB	O	
5	VCK	O	Outputs clock when CXD2130 is used as delay line. Also outputs 1135 Fh color signal modulation clock for PAL. Delay clock for NTSC increases speed of FSC1 by four times and that for PAL increases it by three times. 1135 fh clock increases Cl by 5/4 times. CAM | PAL | VCK 0 | 0 | 4 × FSCI 0 | 1 | 3 × FSCI 1 | 0 | 0 1 | 1 | 5 × FSCI/4 (1135Fh)
6	TEST1	I	TEST pin. Normally connected to GND.
7	TEST2	I	
8	TEST3	I	
9	FLD	O	Field pulse output.
10	Vss	–	Digital GND.
11	TCK	O	Not used.
12	TSEL	I	Inputs signal for switching the color signal modulator for playback titler. Two types of playback title color can be selected. Color 1 is selected when TSEL is 0 and color 2 is selected when TSEL is 1. The two colors can be selected at the same time. Color 1 is specified with six bits from RY00 to RY05 and six bits from BY00 to BY05. Color 2 is specified with six bits from RY10 to RY15 and six bits from BY10 to BY15.
13	ENVD	I	RF envelope detection signal. Used for selecting AFC hold and H SYNC between noise bars during playback. Noise bar section when ENVD is 0. Set ENVD to 1 when not used.
14	PBSYNC	I	Playback COMPOSIT SYNC input. Input with positive polarity. Used for generating AFC reference and CLMP signals.
15	PBL	I	Inputs line alternate signal during PAL playback. PBL is fixed at 1 or 0 for NTSC.
16	SETUP	O	Setup signal for selecting display when VIDEO signal is not input. Output when NOSY is 1. But CAM must be 1. When NOSY is 0, SET UP is 0. (ACTIVE HIGH)
17	REGH	O	Outputs COMPOSIT SYNC signal for selecting display when VIDEO signal is not input and H SYNC signal for selecting between noise bars during CUE/REV. But CAM must be 1 when COMPOSITE SYNC is to be output. Negative polarity output. CAM | PAL | REGEN | ENVD | REGH 0 | 0 | 0 | X | 1 0 | 0 | 1 | 0 | AFCH 0 | 0 | 1 | 1 | 1 X | 0 | X | X | 1 1 | 1 | X | X | C SYNC
18	EVOB	O	Outputs EVF data display signal. EVOW is character signal and EVOB is hem signal. But if EVFC is set to 0, EVOW=EVOB=0. (ACTIVE HIGH)
19	EVOW	O	
20	SVOB	O	Outputs playback VIDEO data display signal. SVOW is character signal and SVOB is hem signal. But if SRC is set to 0, SVOW=SVOB=0. (ACTIVE HIGH)
21	SVOW	O	
22	PBV	I	Playback VD input. Negative polarity.
23	$\overline{\text{SYS RESET}}$	I	System reset input. (ACTIVE LOW)
24	$\overline{\text{VTR SCK}}$	I	Serial communication interface clock input.
25	SIN	I	Serial communication interface data input.
26	$\overline{\text{CS SG}}$	I	Serial communication interface enable input. (LOW ENABLE)
27	VMON	I	Normally "L".
28	VBLK	I	Normally "L".
29	VB	I	Not used. "L"
30	VG	I	Not used. "L"
31	VDD	–	Digital 4V power supply.
32	VR	I	Not used. "L".
33	CGCK	O	Not used.
34	CGH	O	On-screen data display IC HD signal output. DELAY for adjusting position of characters can be set using CHDL0 to CHKL7. Maximum DELAY amount can be adjusted to approximately 6.4 µsec at 32 CLK minnute of CGCK. CHDL0 to CHDL3 are allotted when MP is 1 and CHDL4 to CHDL7 are allotted when MP is 0.
35	CGV	O	On-screen data display IC VD signal output. PBV is selected when CAM is 0 and VD is selected when CAM is 1.
36	Vss	–	Digital GND.
37	DAVB	O	D/A decoupling pin.
38	AVS3	–	D/A converter GND.
39	IREF	O	Not used.
40	VREF	I	Not used.
41	DAVG	O	Not used.
42	PBTC	O	Not used.
43	AVD3	–	D/A converter 4V power supply.
44	AVD2	–	AFC circuit 4V power supply.
45	OPR	I	OP amplifier reference current pin.
46	FOI	I	AFC OP amplifier input.
47	FOO	O	AFC OP amplifier output. Used for outputting using AFC loop integrator.
48	AFCI	I	AFC VCO control voltage pin.
49	AVS2	–	AFC circuit GND.
50	Vss	–	Digital GND.
51	AFCO	O	AFC VCO oscillation output. Outputs 602 Fh which locks with PBSYNC. Oscillation stops when CAM is 1.
52	LCK	I	Line lock clock input. Connected to AFCO pin.
53	XPDF	O	AFC error output pin. When passive element is used for loop filter, PDF pin is used. When internal OP amplifier is used, XPDF pin is used. Error polarities of PDF and XPDF are reversed.
54	PDF	O	
55	VARI	I	Sub-carrier lock clock input. Connected to PLLO pin.
56	PLLO	O	PLL VCO oscillation output. Outputs clock which locks with FSCI and CL. CAM | PAL | PLLO 0 | 0 | 4 × FSCI 0 | 1 | 4 × FSCI 1 | 0 | Oscillation stop 1 | 1 | 5 × CL/4 (1135Fh)
57	AVD1	–	PLL circuit 4V power supply.
58	PLLI	I	PLL VCO control voltage pin.
59	POO	O	PLL OP amplifier output. Used when integrator is used for PLL loop.
60	POI	I	PLL OP amplifier input.

Pin No.	Signal Name	I/O	Function
61	AVS1	–	PLL circuit GND.
62	PDP	O	PLL error output pin.
63	FSCI	I	Playback sub-carrier input. As input buffer is CMOS AMP, signal is connected with C coupling. Minimum amplitude is 200 mVp-p.
64	CFO	O	Not used.
65	3FSI	I	Normally "H".
66	3FSO	I	Not used.
67	8FSC	I	Not used. Normally "L".
68	MCK	O	1820/3 Fh (NTSC), 1816/3 Fh (PAL) clock input pin. Connected to GND when MOD is 0.
69	CL	–	910 Fh (NTSC), 908 Fh (PAL) clock input pin.
70	CLMP	O	Not used.
71	VDD	O	Digital 4V power supply.
72	AJST	O	CXD2130 adjustment timing pulse output. By setting AJST0 to AJST15, outputs one CL 7CLK width pulse every field. Normally, all is set to 0 to set high impedance state.
73	VD	O	V drive pulse. PBV is output when CAM is 0. (ACTIVE LOW)
74	HD	O	H drive pulse. When CAM is 0, HD which AFC locks with PBSYNC is output. (ACTIVE LOW)
75	BF	O	Burst flag pulse. (ACTIVE LOW)
76	CBLK	O	Composite blanking pulse. (ACTIVE LOW)
77	LALT	O	Line alternate pulse.
78	Vss	–	Digital GND.
79	IFVDD	–	Interface power supply. MOD=0 → 4V, MOD=1 → 3V
80	CSYNC	O	Composite SYNC positive polarity.

7-4. CAMERA CORE (VC-134 BOARD IC659: CXD2130R) PIN FUNCTIONS

Pin No.	Signal Name	I/O	Function
1	CTMG	I	Title data (C chroma signal) insertion control. L: Not used.
2	VDD	–	I/O pin power supply 1. For pins 1, 3 to 10, 12 to 20, 95 to 100.
3	TIY7	I	Titler data (Y) input pin. (MSB). BUSW=H: Title data (Y) input. Not used.
4	TIY6	I	Titler data (Y) input. Not used.
5	TIY5	I	
6	TIY4	I	
7	TIY3	I	
8	TIY2	I	
9	TIY1	I	
10	TIY0	I	Titler data (Y) input (LSB). Not used.
11	Vss	–	GND.
12	TIC7	I	Titler data (Y) input (MSB). BUSW=H: Title data (C) input. Not used.
13	TIC6	I	Titler data (C) input. Not used.
14	TIC5	I	
15	TIC4	I	
16	TIC3	I	
17	TIC2	I	
18	TIC1	I	
19	TIC0	I	Titler data (C) input (LSB). Not used.
20	ST	I	R-G/B-G discrimination signal of titler data (C). BUSW=H: R-G/B-G discrimination signal input of data input to TIC0 to TIC7. Not used.
21	VDD	–	Internal circuit power supply.
22	VBC	–	DA (C) pin. Connected to digital GND via approx. 0.1 μF capacitor.
23	AVSC	–	DA (C) analog GND.
24	IRFC	–	DA (C) pin. Connected to 12 kΩ resistor.
25	VRFC	–	DA (C) pin. For setting output full-scale value.
26	VGC	–	DA (C) pin. Connected to analog VDD via approx. 0.1 μF capacitor.
27	AVDC	–	DA (C) analog power supply.
28	IOC	O	DA (C) current output pin.
29	VDD	–	I/O pin power supply 2. For pins 30 to 38, 40 to 48.
30	CDIS	O	R-Y/B-Y discrimination signal of data of chroma signal output from DOC0 to DOC7. Not used.
31	DOC7	O	Chroma signal digital output (MSB). Not used.
32	DOC6	O	Chroma signal digital output. Not used.
33	DOC5	O	
34	DOC4	O	
35	DOC3	O	
36	DOC2	O	
37	DOC1	O	
38	DOC0	O	Chroma signal digital output (LSB). Not used.
39	Vss	–	GND.
40	DOY7	O	Luminance signal digital output (MSB).

Pin No.	Signal Name	I/O	Function
41	DOY6	O	Luminance signal digital output.
42	DOY5	O	Luminance signal digital output.
43	DOY4	O	Luminance signal digital output.
44	DOY3	O	Luminance signal digital output.
45	DOY2	O	Luminance signal digital output.
46	DOY1	O	Luminance signal digital output.
47	DOY0	O	Luminance signal digital output (LSB).
48	$\overline{\text{CORE RESET}}$	I	Clear input. L: Stops all circuits inside IC. Normally H.
49	IOY	O	DA (Y) current output pin.
50	AVY	–	DA (Y) power supply.
51	VGY	–	DA (Y) pin. Connected to analog VDD via approx. 0.1 μF capacitor.
52	VRFY	–	DA (Y) pin. For setting output full-scale values.
53	IRFY	–	DA (Y) pin. Connected to 12 kΩ resistor.
54	AVSY	–	DA (Y) analog GND.
55	VBY	–	DA (Y) pin. Connected to digital GND via approx. 0.1 μF capacitor.
56	VDD	–	Power supply for internal circuits.
57	VCK	I	4 fsc clock input for chroma signal processing.
58	CVOB	I	Normally "L".
59	CVOW	I	Normally "L".
60	VHLD	I	Mosaic vertical hold signal input. H: Normal operation. L: Hold operation.
61	HHLD	I	Mosaic horizontal hold signal input. H: Normal operation. L: Hold operation.
62	CSYNC	I	Composite SYNC (composite sync signal) input. Input from CXD2101BR.
63	LALT	I	Line alternate input. Input from CXD2101BR.
64	CBK	I	Composite BLANK (composite blanking period signal) input. Input from CXD2101BR.
65	BF	I	Burst flag input. Input from CXD2101BR.
66	HD	I	Horizontal sync signal input. Input from CXD2101BR.
67	VD	I	Vertical sync signal input. Input from CXD2101BR.
68	AJST	I	Latch pulse for serial outputting image data in IC from SO pin. L: Latch. H: Normally. Input from CXD2101BR.
69	VDD	–	I/O pin power supply 3. For pins 57 to 68.
70	$\overline{\text{CAM SCK}}$	I	Serial data clock input.
71	CORE SI	I	Serial data input. Input at rising edge of SCK.
72	$\overline{\text{CS}}$ CORE	I	Serial data enable signal input. Serial data is effective at L.
73	CORE SO	O	Outputs internal image data specified by AJST pulse as serial data.
74	Vss	–	GND
75	CL	I	Clock input (NTSC: 910 fH=14.318 MHz, PAL: 908 fH=14.188 MHz)
76	DEF	I	Signal correction timing input. Normally fixed at H.
77	ID	I	CCD line ID signal input.
78	MCK	I	Main clock input. NTSC 1820/3 fH, PAL 1816/3 fH.
79	VDD	–	I/O pin power supply 4. For pins 70 to 73, 75 to 78, and 80.
80	CS	I	Normally "L".
81	VDD	–	I/O pin power supply 5. For pins 82, 84 to 93.
82	ADCK	O	A/D converter clock. Reverse output of clock input to MCK pin.
83	Vss	–	GND.
84	D9	I	Data input from A/D converter (MSB).
85	D8	I	Data input from A/D converter.
86	D7	I	Data input from A/D converter.
87	D6	I	Data input from A/D converter.
88	D5	I	Data input from A/D converter.
89	D4	I	Data input from A/D converter.
90	D3	I	Data input from A/D converter.
91	D2	I	Data input from A/D converter.
92	D1	I	Data input from A/D converter.
93	D0	I	Data input from A/D converter (LSB).
94	VDD	–	Power supply for internal circuits.
95		O	Test output. Not used.
96		O	
97		O	
98		O	
99	BUSW	I	Input/output selection control of bi-directional pins for titler. Normally "H".
100	YTMG	I	Title data (Y luminance signal) insertion control. L: When not used.

7-5. MECHANISM CONTROL MICRO PROCESSOR (VC-134 BOARD IC203: CXP80624A-023R) PIN FUNCTIONS

Pin No.	Signal Name	I/O	Function
1	RP PB	O	REC/PB switching signal of REC/PB amplifier (VC-134 board IC002, 003) and ATF servo IC (VC-134 board IC204). "H": PB.
2	$\overline{\text{FE ON}}$	O	Flying erase oscillation on/off control signal. "L": Oscillation.
3	JOG VD	O	False VD signal inserted in playback video signal during variable speed playback.
4	JOG	O	Variable speed playback/normal playback switching signal of video circuit. "H": Variable speed playback.
5	$\overline{\text{MIC MONO}}$	I	Not used. Connected to GND.
6	PB 1.7M DET	I	
7	JACK MONO	I	Not used. Connected to SS5V.
8	INT VD	O	Internal VD signal.
9	PBV	O	System synchronizing signal which becomes reference for character generator, communication, LANC synchronization. When CAM: Locks to CAM VD (Pin (62)). When VTR: Locks to VTR SYNC (Pin (64)).
10	NC		Not used (open).
11	NC		
12	NC		
13	MODE SW D	I	Mode switch input.
14	MODE SW C	I	
15	MODE SW B	I	
16	MODE SW A	I	
17	$\overline{\text{REC PROOF SW}}$	I	Recording-proof switch input. "H": REC prohibition.
18	ME/$\overline{\text{MP}}$ SW	I	ME/$\overline{\text{MP}}$ switch input. "L": MP, "H": ME.
19	E/$\overline{\text{L}}$ DET	I	Not used. Connected to GND.
20	VIDEO MUTE	O	Video output mute signal. "H" mute.
21	LINE MIX	O	Not used (open).
22	MX SEL 1	O	
23	MX SEL 2	O	
24	MX ON/OFF	O	
25	Hi8/$\overline{\text{NORM}}$ (E/$\overline{\text{L}}$)	O	
26	CAM/$\overline{\text{LINE}}$	O	Camêra input/line input switching signal. "H": Camera input.
27	SP/$\overline{\text{LP}}$	O	SP/LP switching signal. "L": LP.
28	$\overline{\text{EDIT}}$	O	Not used (open).
29	UNLOAD	O	Loading motor control signal. When unloading: "H" or "H" pulse.
30	LOAD	O	Loading motor control signal. When loading: "H" or "H" pulse.
31	LM LIM CONT	O	Loading motor limiter control signal. Momentarily "H" when loading.
32	DRUM ON	O	Drum motor on/off signal. "H" (Approx. 1.3V): Drum on.
33	DRUM FWD/$\overline{\text{RVS}}$	O	Drum rotation direction control signal. Normally "H".
34	NC		Not used (open).
35	NC		
36	$\overline{\text{REEL HALL CONT}}$	O	Reel FG sensor (HALL element) power supply control signal. When active: "L".
37	MP		Connected to GND.
38	$\overline{\text{RESET}}$	I	Reset signal from mode control micro processor (VC-134 board IC903). When reset: "L".
39	VSS		GND
40	XTAL	O	11.89 MHz clock oscillation circuit.
41	EXTAL	I	
42	$\overline{\text{CS MECHA}}$	I	Chip select signal from mode control micro processor (VC-134 board IC903).
43	DATA TO SLAVE	I	Serial data input from mode control micro processor.
44	DATA TO MSTER	O	Serial data output to mode control micro processor.
45	$\overline{\text{MODECON SCK}}$	I	Serial clock input from mode control micro processor.
46	MONO REC	O	Not used (open).
47	AUDIO MUTE	O	Audio output mute signal. "H": Mute.
48	VIDEO IN/$\overline{\text{OUT}}$	O	Video input/output switching signal.
49	AUDIO OUT/$\overline{\text{IN}}$	O	Audio input/output switching signal.
50	AVSS		A/D converter system GND.
51	AVREF		A/D converter system reference voltage. Connected to SS5V.
52	AVDD		A/D converter system power supply. Connected to SS5V.
53	NC		Not used. Connected to GND.
54	TAPE END	I	Tape end detection signal. Normally: "L", "H" pulse at tape end.
55	TAPE TOP	I	Tape top detection signal. Normally: "L", "H" pulse at tape top.
56	$\overline{\text{DEW DET}}$	I	Condensation detection signal. "L" when condensation present.
57	NC	I	Not used. Connected to GND.
58	ATF ERROR	I	ATF error, ATF lock error input.
59	S REEL FG	I	S reel FG signal input.
60	T REEL FG	I	T reel FG signal input.
61	NC		Not used. Connected to GND.
62	CAM VD	I	VD signal from camera circuit sync generator (VC-134 board IC660). V cycle pulse.
63	FLD	I	FIELD signal from camera circuit sync generator. 2V cycle pulse.
64	VTR SYNC	I	Composite sync signal separated from recording/playback Y signal.
65	SP/$\overline{\text{LP}}$ DET	I	Discriminates recording mode of playback tape during CUE/REVIEW/FF/REW. "L"=LP
66	DRUM PG	I	Drum PG signal input. For drum phase servo. 22.2 msec. cycle "H" pulse.
67	DRUM FG	I	Drum FG signal input. For drum speed servo. 3.7 msec. cycle pulse.
68	CAP FG	I	Capstan FG signal input. Approx. 820 Hz during REC/PB for capstan speed servo.
69	DS ON	O	Not used (open).
70	ME/$\overline{\text{MP}}$	O	Recording current switching signal. "H": ME tape.
71	TAPE LED ON	O	TAPE LED on/off signal. 200 msec. cycle "H" pulse during REC/PB.
72	VA PB	O	REC/PB switching signal of video/audio circuit. "H": PB.
73	CAP PWM	O	Capstan error signal output. 20.15 μsec. PWM signal.
74	DRUM PWM	O	Drum error signal output. 20.15 μsec. PWM signal.
75	CFG HMS	I	Capstan FG signal input. For tape counter.
76	$\overline{\text{S JACK IN}}$	I	Not used. Connected to SS5V.
77	NC	I	
78	NC	O	
79	$\overline{\text{LM LIM ON}}$	I	Loading motor limiter on detection signal. Normally "H". "L" when limiter is on.
80	Hi8 MP SW	I	Hi8 MP switch input. "H": Hi8 MP tape.

	EJECT	USE	LOAD	REW	FF	REC/PB	TURN	STOP
MODE SW D	L	L	L	H	H	H	H	L
MODE SW C	H	L	L	L	L	H	H	H
MODE SW B	L	L	L	L	L	L	L	L
MODE SW A	H	H	L	L	H	H	L	L

Pin No.	Signal Name	I/O	Function
81	COMPOSIT REC	O	Video input/S video input switching signal. "H": Video input.
82	CLOG DET	I	Head clog detection signal. "L": Normal.
83	REF PILOT	O	Reference pilot signal for ATP servo. Output after synchronizing with drum rotation and switching 4 frequencies. f1=102.52 kHz, f2=118.95 kHz, f3=165.21 kHz, f4=148.69 kHz.
84	NC		Not used. Connected to GND.
85	NC		
86	VSS		GND.
87	VDD		Connected to SS5V.
88	VPP		
89	$\overline{\text{MUTE 2B}}$	O	Head mute signal. Control signal for preventing cross-talk from other 3 heads during recording/playback. When PB/REC: 4V cycle pulse (Only head playing back/recording "L"). In other modes: "H.
90	$\overline{\text{MUTE 1B}}$	O	
91	$\overline{\text{MUTE 2A}}$	O	
92	$\overline{\text{MUTE 1A}}$	O	
93	$\overline{\text{REC 2B}}$	O	Recording heads (1A, 1B, 2A, 2B) switching control signal. When REC: 4V cycle pulse (Only head recording "L"). In other modes: "H".
94	$\overline{\text{REC 1B}}$	O	
95	$\overline{\text{REC 2A}}$	O	
96	$\overline{\text{REC 1A}}$	O	
97	$\overline{\text{RF SWP}}$	O	RF switching pulse signal. 30 Hz, 50% duty pulse.
98	$\overline{\text{1/2 RF SWP}}$	O	1/2 RF switching pulse signal. 15 Hz, 50% duty pulse.
99	CAP ON	O	Capstan driver on/off control signal. "H": Capstan on.
100	CAP FWD/$\overline{\text{RVS}}$	O	Capstan rotation direction control signal. "H": FWD, "L": RVS.

7-6. MODE CONTROL MICRO PROCESSOR (VC-134 BOARD IC903: MB89092PFV-G-137A-BND) PIN FUNCTIONS

Pin No.	Port Name	Signal Name	I/O	Function
1	MOD0	TEST MODE 0	I	Connected to GND.
2	MOD1	TEST MODE 1	I	Connected to GND.
3	X0	X0	I	10 MHz clock oscillation circuit.
4	X1	X1	O	
5	VSS	VSS		GND
6	XRST	$\overline{\text{RESET}}$	I	Reset input.
7	P00/EI20	$\overline{\text{DATA SW}}$	I	Date (+) key (SW-230 board S301) input. Normally "H". "L" when key is pressed.
8	P01/EI21	$\overline{\text{TIME SW}}$	I	Time key (SW-230 board S302) input. Normally "H". "L" when key is pressed.
9	P02/EI22	$\overline{\text{EJECT SW}}$	I	Cassette eject switch (EZ-6 board S550) input. Normally "H". "L" when switch is pressed.
10	P03/EI23	$\overline{\text{VTR MODE SW}}$	I	Power supply switch (CF-36 board S371) input. "L" when power supply switch is at "Player".
11	P04/EI24	$\overline{\text{START/STOP MODE SW}}$	I	$\overline{\text{START/STOP MODE SW}}$(EZ-6 board S553) input. "H" when starts/stops and "L" in REC mode when key is pressed.
12	P05/EI25	$\overline{\text{START/STOP SW}}$	I	Start/stop key (CF-36 board S370) input. "L" when key is pressed.
13	P06/EI26	$\overline{\text{CC DOWN SW}}$	I	CCDOWN switch (mechanism section) input. "L" when cassette compartment is locked.
14	P07/EI27	$\overline{\text{CAM+STBY SW}}$	I	Power supply switch (CF-36 board S371), input. "L" when power supply switch is at "Camera".
15	P10/EI10	BATT IN	I	Main battery detection input. "H" when main battery is loaded or external power supply is connected.
16	P11/EI11	PB V	I	System sync signal from mechanism control micro processor (VC-134 board IC203). Timing reference signal of communication, LANC, etc.
17	P12/EI12	SYSTEM SYNC	I	Not used.
18	P13/EI13	$\overline{\text{LANC POWER ON}}$	I	Power on signal input from wired remote commander. "L" when power switch of remote commander is pressed.
19	P14	$\overline{\text{LI PRE END}}$	I	Lithium battery end detection input. "L" when lithium battery has worn out or has not been loaded.
20	P15	$\overline{\text{EEPROM WE}}$	O	EEPROM (VC-134 board IC901) writing enable signal. "L" when writing data.
21	P16	$\overline{\text{COLOR LCD DD ON}}$	O	Color LCD power supply control signal. "L" when power supply is ON.
22	P17	$\overline{\text{CAUTION LED}}$	O	CAUTION LED (FP-36 board D723) ON/OFF signal. "L" when ON.
23	P20	$\overline{\text{TALLY LED}}$	O	Tally LED (FP-36 D721, TL-41 board D651) on/off signal. "H" during camera recording.
24	P21	$\overline{\text{SYSTEM RESET}}$	O	Reset signal of all systems. Normally "H". "L" when reset.
25	P22	$\overline{\text{CHARGE}}$	O	Charge control signal. Normally "H". "L" when charged.
26	COMD	CLK 10M/$\overline{\text{32k}}$	I	Mode control micro processor clock frequency switching signal. "H" (10 MHz) when main battery is loaded or external power supply is connected, "L" (32 kHz) when backed up by lithium battery.
27	P24/SI0	N.C	O	Not used.
28	P25/SO0	AUDIO CAM/$\overline{\text{LINE}}$	O	Audio input camera/line selection signal. "H" when microphone input is set.
29	P26/SCK0	LCD RS	O	Not used.
30	P27/RMC1	$\overline{\text{SIRCS IN}}$	I	Infrared remote commander signal input.
31	P30/SEG31	LCD E	O	Not used.
32	P31/SEG30	AC 6.5/$\overline{\text{8.4}}$	O	AC power supply voltage switching. "H" when 6.5V. "L" when 8.4V.
33	P32/SEG29	$\overline{\text{CS EEPROM}}$	O	Chip select signal to EEPROM (VC-134 board IC901).
34	P33/SEG28	$\overline{\text{CS SR}}$	O	Chip select signal to video circuit Y signal process IC (VC-134 board IC301).

Pin No.	Port Name	Signal Name	I/O	Function
35	P34/SEG27	AV IN/$\overline{\text{OUT}}$	O	AV jack input/output switching signal. Normally "L". (Output mode)
36	P35/SEG26	$\overline{\text{CS}}$ SG	O	Chip select signal to SYNC generator (VC-134 board IC660).
37	P36/SEG25	STB DA	O	Strobe signal to video circuit EVR (VC-134 board IC150).
38	P37/SEG24	$\overline{\text{CS}}$ TAI	O	Chip select signal to camera micro processor (VC-134 board IC653).
39	P40/SEG23	LCD DB0	O	Not used.
40	P41/SEG22	LCD DB1	O	
41	P42/SEG21	LCD DB2	O	
42	P43/SEG20	LCD DB3		
43	P44/SEG19	LCD DB4		
44	P45/SEG18	LCD DB5		
45	P46/SEG17	LCD DB6	O	
46	P47/SEG16	LCD DB7	O	
47	VCC	VCC		+5V power supply (+3V power supply during backup).
48	SEG15		O	Not used.
49	SEG14		O	
50	SEG13		O	
51	SEG12		O	
52	SEG11		O	
53	SEG10		O	
54	SEG09		O	
55	SEG08		O	
56	VSS			GND
57	SEG07		O	Not used.
58	SEG06		O	
59	SEG05		O	
60	SEG04		O	
61	SEG03		O	
62	SEG02		O	
63	SEG01		O	
64	SEG00		O	
65	V3	V3	I	
66	V2	V2	I	
67	V1	V1	I	
68	V0	V0	I	
69	COM0	COM0	O	
70	COM1	COM1	O	
71	COM2	COM2	O	
72	COM3	COM3	O	
73	P80/STB	$\overline{\text{CS OSD}}$	O	Chip select signal to character generator (VC-134 board IC904).
74	P81/XCS	$\overline{\text{CS}}$ MECHA	O	Chip select signal to mechanism control micro processor (VC-134 board IC203).
75	P82/SI1	DATA TO MASTER	I	Serial data input signal.
76	P83/SO1	DATA TO SLAVE	O	Serial data output signal.
77	P84/SCK1	$\overline{\text{MODECON SCK}}$	O	Serial data transfer clock.
78	P85/ECK	TG STBY 1	O	Controls 4FSC of timing generator (VC-134 board IC602). "H" when no signal in VTR mode, "L" at other times.
79	P86/TO1	VTR DD ON	O	VTR DC-DC converter control signal. "H" when power switch is at "Video" or "Camera".
80	P87/TO2	CAM DD ON	O	CAMERA DC-DC converter control signal.
81	AVSS	AVSS		A/D port GND.
82	P90/AN00	K AD IN 0	I	Key input. A/D port. No input ······························ 3.66 to 4.75V LCD ON/OFF key (SW-230 board S304) ·········· 1.58 to 2.52V REC•REVIEW key (SW-230 board S303) ········ 0 to 0.3V
83	P91/AN01	K AD IN 1	I	Key input. A/D port. No input ······························ 3.66 to 4.75V FF key (FK-60 board S355) ·················· 2.52 to 3.66V PLAY key (FK-60 board S356) ················ 1.58 to 2.52V REW key (FK-60 board S357) ················· 0.85 to 1.58V STOP key (FK-60 board S358) ················ 0 to 0.3V
84	P92/AN02	K AD IN 2	I	Key input. A/D port. No input ······························ 3.66 to 4.75V BRIGHT – key (FK-60 board S351) ·············· 2.52 to 3.66V BRIGHT + key (FK-60 board S352) ·············· 1.58 to 2.52V Data screen key (FK-60 board S353) ·············· 0.85 to 1.58V Counter reset key (FK-60 board S354) ············ 0 to 0.3V
85	P93/AN03	$\overline{\text{BEEP OFF SW}}$	I	BEEP ON/OFF switch (EZ-6 board S552) input. "H" when ON and "L" when OFF.
86	P94/AN04	$\overline{\text{SIRCS}}$ SW	I	Remote commander ON/OFF switch (EZ-6 board S551) input. "H" when ON and "L" when OFF.
87	P95/AN05	Back light ON	O	Back light ON/OFF control signal. "H" when ON and "L" when OFF.
88	P96/AN06	EZ connection	I	Not used.
89	P97/AN07	CHARGE REF	I	CHARGE REF voltage input.
90	AVCC	AVCC		A/D port power supply (+5V).
91	PA0/AN08	BATT SENS	I	For battery end detection, main battery voltage input. (Voltage divided into 1/2 by R935, R936).
92	PA1/AN09	BATT/$\overline{\text{EXT}}$	I	Battery/external power supply switching signal input. "L" when external power supply is used.
93	PA2/AN10	$\overline{\text{CHARGE LED}}$	I	Charge LED (SD-10 board D200) ON/OFF signal. "L" when ON and "Hiz" when OFF.
94	PA2/AN11	OUT STATION DIR	I	Not used.
95	PA4/LSI	LANC IN	I	LANC serial data input.
96	PA5/LSO	LANC OUT	O	LANC serial data output.
97	PA6/COUT	BUZZER OUT	O	Buzzer output.
98	VCC	VCC		+5V power supply (+3V power supply during backup).
99	CL1	CL1	O	32 kHz clock oscillation circuit (for clock).
100	CL0	CL0	I	

7-7. INTERFACE

7-7-1. System Control-Video and Audio Block Interface (VC-134 Board)

Signal Name	I/O	Pin No.	VTR Mode															CAMERA Mode					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW	SHUTTLE EDIT *14		REC *16	REC *16 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
SP/$\overline{\text{LP}}$	O	IC203 ㉗	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*2	*2	H	H/L	H/L	H	*2	*2	H	H
VA PB	O	IC203 (72)	L	L	L	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE *13	O	IC203 ㊼	H	H	H	H	H	L	H	H	H	H	H	H	H	L	L	L	L	H	H	L	H
VIDEO MUTE	O	IC203 ⑳	H	H	H	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*3	*3	L	L	*4	*4	*4	*4
CAM/$\overline{\text{LINE}}$	O	IC203 ㉖	H	H	H	H	H	H	H	H	H	H	H	H	H	L	L	H	H	H	H	H	H
JOG VD	O	IC203 ③	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	L	*5	L	L	L	L	L	*5	L	*5
RP PB	O	IC203 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{FE ON}}$	O	IC203 ②	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{1/2 RF SWP}}$	O	IC203 (98)	H	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RF SWP	O	IC203 (97)	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
$\overline{\text{MUTE 2B}}$	O	IC203 (89)	L	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
$\overline{\text{MUTE 1B}}$	O	IC203 (90)																					
$\overline{\text{MUTE 2A}}$	O	IC203 (91)																					
$\overline{\text{MUTE 1A}}$	O	IC203 (92)																					
JOG	O	IC203 ④	L	L	L	H	H	L	H	H	H	H	H	L	H	L	L	L	L	L	H	L	H
AUDIO OUT/$\overline{\text{IN}}$	O	IC203 ㊾	L	L	L	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	L	L	L	L	*15	*15	*15	*15

*1. Outputs the discrimination results of the mode just before. SP mode: "H", LP mode: "L".
*2. Outputs the discrimination results of the recording mode of the tape played back.
SP mode: "H", LP mode: "L".
*3. "L" when the external input (video) is present. "H" when at other times.
*4. "H" when there are no signals on the tape. "L" at other times.
*5. False VD signal.
*6. 15 Hz duty 50% pulse (synchronizes with the rotation of the drum)..
*7. 30 Hz duty 50% pulse (synchronizes with the rotation of the drum).
*8. Refer to Time Chart 1.
*9. Refer to Time Chart 2.
*10. "H" at SP recorded section of the tape, "L" at LP recorded section.
*11. "H" at unrecorded section or drop-out section. Head clog detection input.
*12. Composite sync signal input separated from the camera video signal, line inut video signal (REC for adjustment and REC/PAUSE mode only) or playback video signal. (Polarity +)
*13. "H" during load/unload of CAMERA mode.
*14. Condition where edit search is pressed during the pause of a playback.
*15. "H" when playing back with no signals and with the data screen off.
*16. Mode for adjustments.

Signal Name	I/O	Pin No.	VTR Mode																CAMERA Mode				
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-PAUSE	FRAME	SLOW	SHUTTLE EDIT *14		REC *16	REC *16 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
$\overline{\text{REC2B}}$	O	IC203 (93)	H	H	H	H	H	H	H	H	H	H	H	H	H	*9	H	H	*9	H	H	H	H
$\overline{\text{REC1B}}$	O	IC203 (94)																					
$\overline{\text{REC2A}}$	O	IC203 (95)																					
$\overline{\text{REC1A}}$	O	IC203 (96)																					
SP/$\overline{\text{LP}}$ DET	I	IC203 (65)	L	*10	*10	*10	*10	L	*10	*10	*10			L	*10	H	H	H	H	L	*10	L	*10
CLOG	I	IC203 (82)	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
VTR SYNC	I	IC203 (64)	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*1. Outputs the discrimination results of the mode just before. SP mode: "H", LP mode: "L".

*2. Outputs the discrimination results of the recording mode of the tape played back.
SP mode: "H", LP mode: "L".

*3. "L" when the external input (video) is present. "H" when at other times.

*4. "H" when there are no signals on the tape. "L" at other times.

*5. False VD signal.

*6. 15 Hz duty 50% pulse (synchronizes with the rotation of the drum).

*7. 30 Hz duty 50% pulse (synchronizes with the rotation of the drum).

*8. Refer to Time Chart 1.

*9. Refer to Time Chart 2.

*10. "H" at SP recorded section of the tape, "L" at LP recorded section.

*11. "H" at unrecorded section or drop-out section. Head clog detection input.

*12. Composite sync signal input separated from the camera video signal, line inut video signal (REC for adjustment and REC/PAUSE mode only) or playback video signal. (Polarity +)

*13. "H" during load/unload of CAMERA mode.

*14. Condition where edit search is pressed during the pause of a playback.

*15. "H" when playing back with no signals and with the data screen off.

*16. Mode for adjustments.

7-7-2. System Control-Servo Block Interface (VC-134 Board)

Signal Name	I/O	Pin No.	VTR Mode															CAMERA Mode				
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
T.REEL FG	I	IC203 (60)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	IC203 (59)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	IC203 (58)	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC203 (66)	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC203 (67)	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC203 (68), (75)	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC203 (99)	L	H	H	H	H	H	H	H	L	*8	*8	H	H	H	L	L	H	H	H	H	H
REF PILOT	O	IC203 (83)	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB	O	IC203 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
DRUM FWD/$\overline{RVS}$	O	IC203 ㉝	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/ $\overline{RVS}$	O	IC203 (100)	L	H	L	H	L	H	H	L	L	*8	*8	H	L	H	L	L	H	H	L	H	L
DRUM PWM	O	IC203 (74)	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC203 (73)	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
LM LIM CONT *11	O	IC203 ㉛	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON *12	O	IC203 ㉜	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

*1. A pulse whose amplitude has been modulated by the rotation of the reel (5.5 msec. cycle) is input. (The amplitude modulation cycle is approx. 1 sec. during REC/PB.)

*2. ATF error voltage input.

*3. One PG pulse is input with one drum rotation. Approx. 45 Hz.

*4. Six FG pulses are input with one drum rotation. Approx. 270 Hz.

*5. 360 FG pulses are input with one capstan rotation. Approx. 820 Hz during REC/PB (SP).

*6. Outputs four frequencies synchronized with the rotation of the drum. f_1=102.54 kHz, f_2=118.95 kHz, f_3=165.21 kHz, f_4=148.69 kHz.

*7. Outputs f_4 (148.69 kHz).

*8. "H" pulse when the tape is run.

*9. 21.5 μsec. cycle PWM signal.

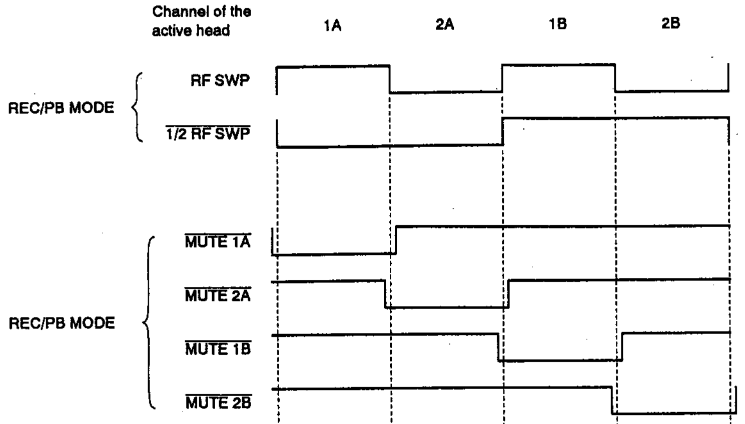
*11. Temporarily "H" only during cassette loading (To prevent your finger from being caught).

*12. H level is approx. 1.3 Vdc.

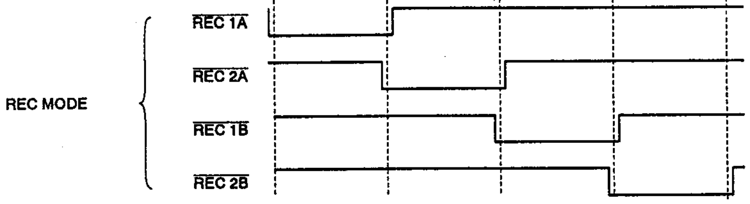
*13. Condition where edit search is pressed during the pause of a playback.

*14. Mode for adjustments.

Timing Chart 1


Channel of the active head
1A
2A
1B
2B
REC/PB MODE
RF SWP
$\overline{\text{1/2 RF SWP}}$
REC/PB MODE
$\overline{\text{MUTE 1A}}$
$\overline{\text{MUTE 2A}}$
$\overline{\text{MUTE 1B}}$
$\overline{\text{MUTE 2B}}$

Timing Chart 2


REC MODE
$\overline{\text{REC 1A}}$
$\overline{\text{REC 2A}}$
$\overline{\text{REC 1B}}$
$\overline{\text{REC 2B}}$

SECTION 8
CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 182.

8-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

8-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Regulated power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly)[Note 1]	J-6082-053-A	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Extension cable (8P, 0.8 mm)	J-6082-275-A	For adjusting the camera section[Note 2]
J-8	Measuring pin tool for video section	J-6082-140-A	For adjusting the video section (14P)
J-9	Extension cable (30P, 0.8 mm)	J-6082-189-A	For extension between the DD-57 board (CN951) and VC-134 board (CN205)
J-10	Extension cable (28P, 0.8 mm)	J-6082-174-A	For extension between the FP-62 board (SD-10 board CN202) and VC-134 board (CN903)
J-11	Measuring pin tool for LCD and camera	J-6082-192-A	For adjusting the LCD and camera section[Note 2]
J-12	Extension cable (2P, 1.5 mm)	J-6082-080-A	For extension between the DD-57 board (CN952) and SD-10 board (CN201)
	Extension cable (3P, 1.5 mm)	J-6082-913-A	For extension between the DD-57 board (CN953) and Battery terminal
J-13	Tool for connecting the adjusting remote commander	J-6082-276-A	
J-14	Power cord	J-6082-223-A	For connecting the battery terminal and DC power supply

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro. processor (8-759-148-35).

Note 2: When adjusting the camera section, use the J-11 board (J-6082-192-A) and J-7 extension cable (J-6082-275-A) together.

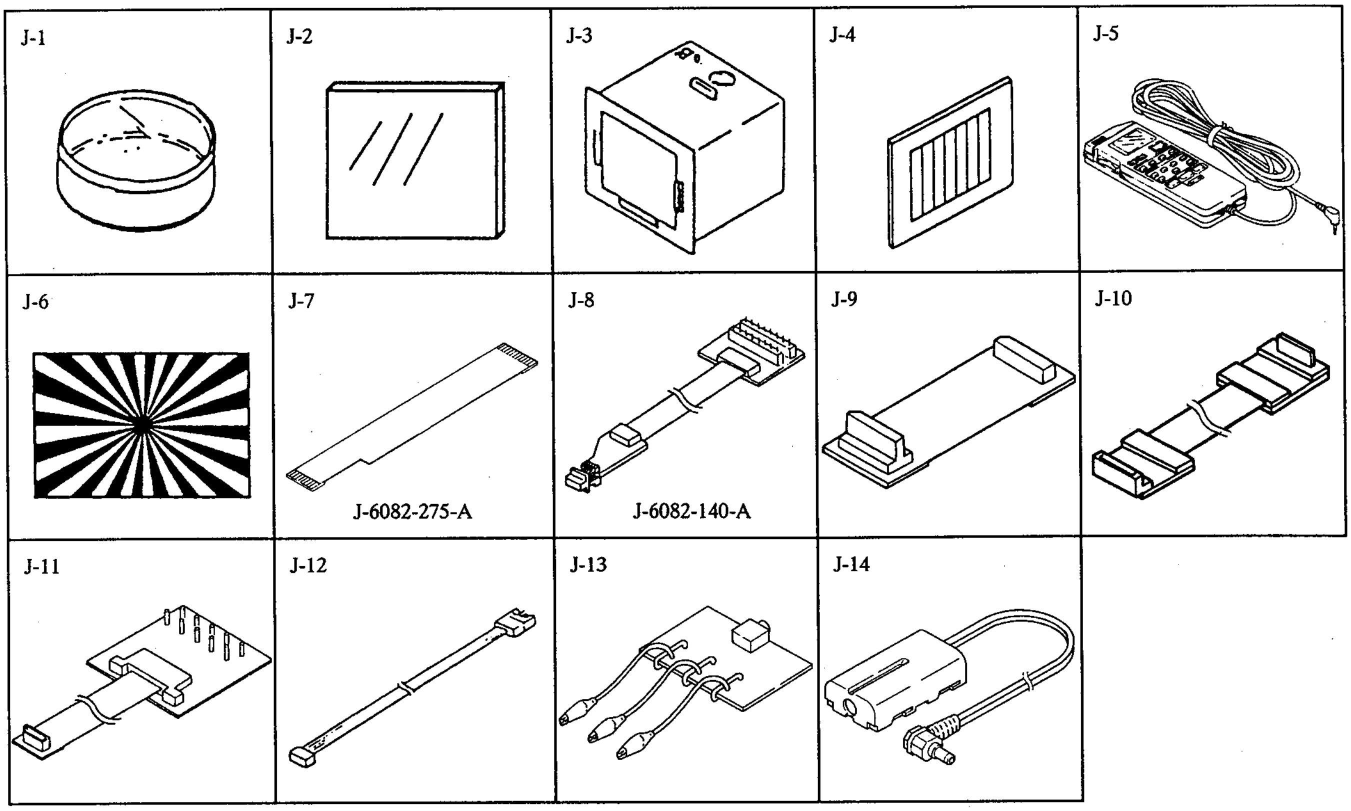

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-6082-275-A
J-8
J-6082-140-A
J-9
J-10
J-11
J-12
J-13
J-14

Fig. 8-1.

8-1-2. Preparations

Note 1: For further details of how to remove the cabinet and each board, refer to "2. Disassembly".

Note 2: When adjusting only, the lens block and DD-57 board need not be taken apart.

1) Connect the equipments for adjusting as shown in Fig. 8-3.
2) The distance from the front glass of the lens to the pattern box will change according to if the lens is set to TELE or WIDE.
   TELE・・・・Approx. 1.1m
   WIDE・・・・Approx. 0.35m
3) The MA-172 board (Mic amplifier) attached to the lens block is not required in adjustments. Remove the following two connectors.
   1. 4-pin connector of the CF-36 board
   2. CN550 of the MA-172 board
4) Connect the adjusting remote commander using the measuring pin tool for the video section (14P) and the tool for connecting the adjusting remote commander. These tools are shown in the following table.

Tool for Connecting the Adjusting Remote Commander (Clip)	Measuring Pin Tool for Video Section
White	Pin ① (LANC SIG)
Red	Pin ② (LANC DC)
Black	Pin ③ (GND)

5) The cabinet (top) (CF-36 board: Power switch) need not be connected if the forced camera power supply ON mode (Note 1) is set. If disconnecting it, disconnect the following connector.
   1. CN902 of VC-134 board
   Be sure to exit this mode after completing the adjustment. (Note 2)

Note 1: Setting the Forced Camera Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
   (Release of the page D protect)
2) Set data: 21 to page: D, address: 21, and press the PAUSE button of the adjusting remote commander.
   (Forced camera power supply ON mode and DDS display mode setting)

By carrying out the above, the camera can be operated even if the cabinet (top) has been removed. Be sure to exit the forced camera power ON mode after completing the adjustment.

Note 2: Exiting the Forced Camera Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
   (Release of the page D protect)
2) Set data: 00 to page: D, address: 21, and press the PAUSE button of the adjusting remote commander.
   (Release of forced camera power supply ON mode and DDS display mode)
3) Set data: 00 to page: 1, address: 00.
   (Page D protect setting)

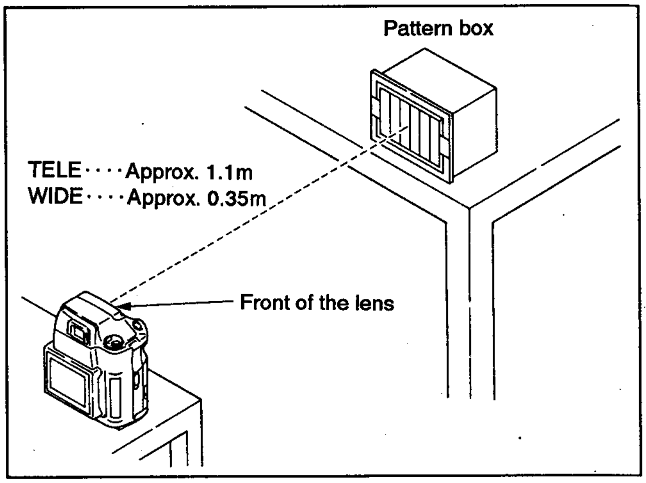


Fig. 8-2.

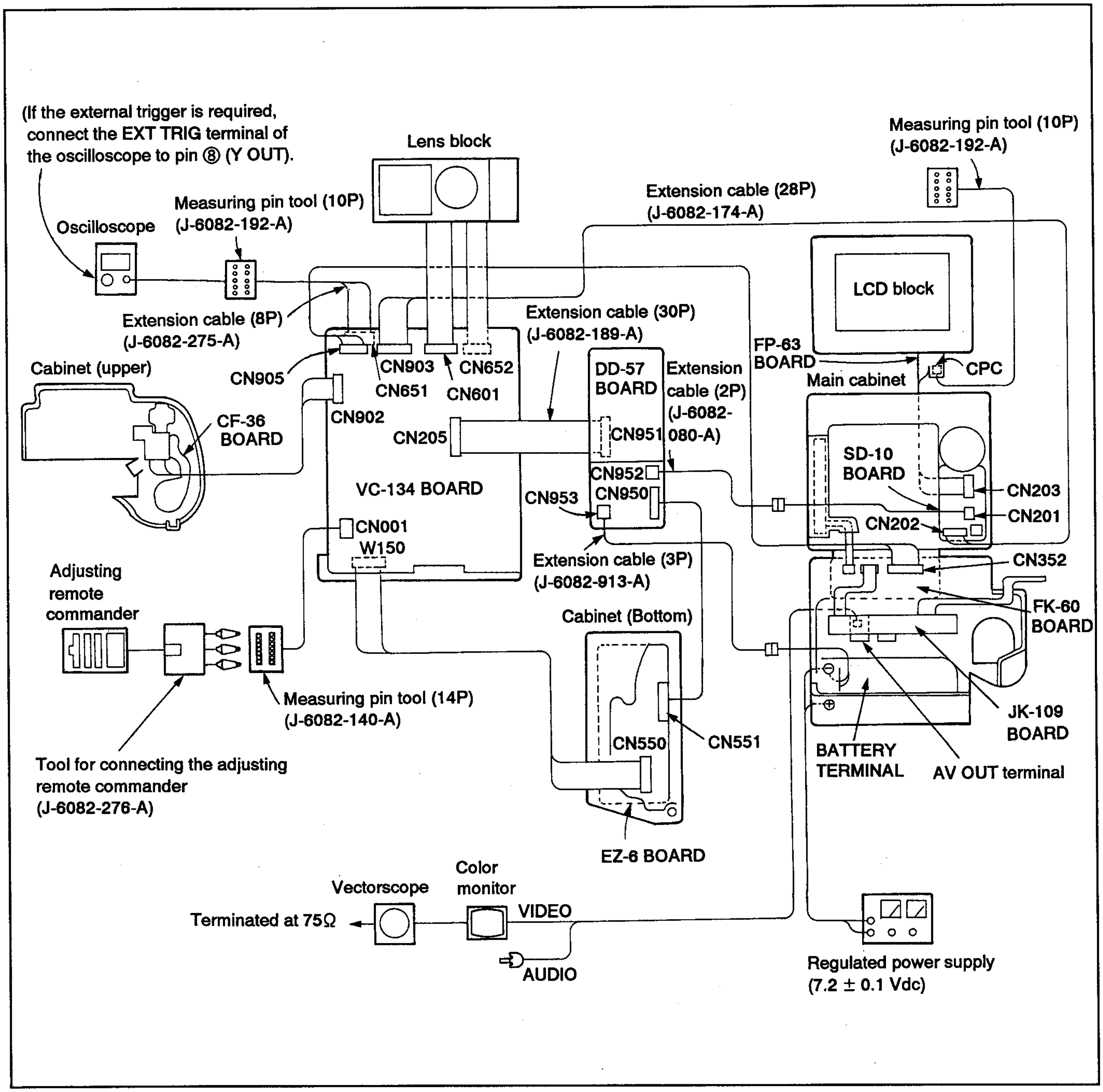

(If the external trigger is required,
connect the EXT TRIG terminal of
the oscilloscope to pin ⑧ (Y OUT).
Lens block
Measuring pin tool (10P)
(J-6082-192-A)
Measuring pin tool (10P)
(J-6082-192-A)
Oscilloscope
Extension cable (28P)
(J-6082-174-A)
LCD block
Extension cable (30P)
(J-6082-189-A)
Extension cable (8P)
(J-6082-275-A)
FP-63
BOARD
CPC
Main cabinet
Cabinet (upper)
CN905
CN903
CN652
CN651
CN601
DD-57
BOARD
Extension
cable (2P)
(J-6082-
080-A)
CF-36
BOARD
CN902
CN205
CN951
SD-10
BOARD
CN952
CN203
VC-134 BOARD
CN953
CN950
CN201
CN202
CN001
W150
Extension cable (3P)
(J-6082-913-A)
CN352
Adjusting
remote
commander
Cabinet (Bottom)
FK-60
BOARD
Measuring pin tool (14P)
(J-6082-140-A)
JK-109
BOARD
CN550
CN551
BATTERY
TERMINAL
AV OUT terminal
Tool for connecting the adjusting
remote commander
(J-6082-276-A)
EZ-6 BOARD
Color
monitor
Vectorscope
Terminated at 75Ω
VIDEO
AUDIO
Regulated power supply
(7.2 ± 0.1 Vdc)

Fig. 8-3.

8-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and adjust without loading the cassette tape, unless specified otherwise.

1. Camera/player power switch (CF-36 board)············Camera
2. Standby switch (CF-36 board) ··························Standby

2. Adjusting Procedure

Adjust in the given order.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 8-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.

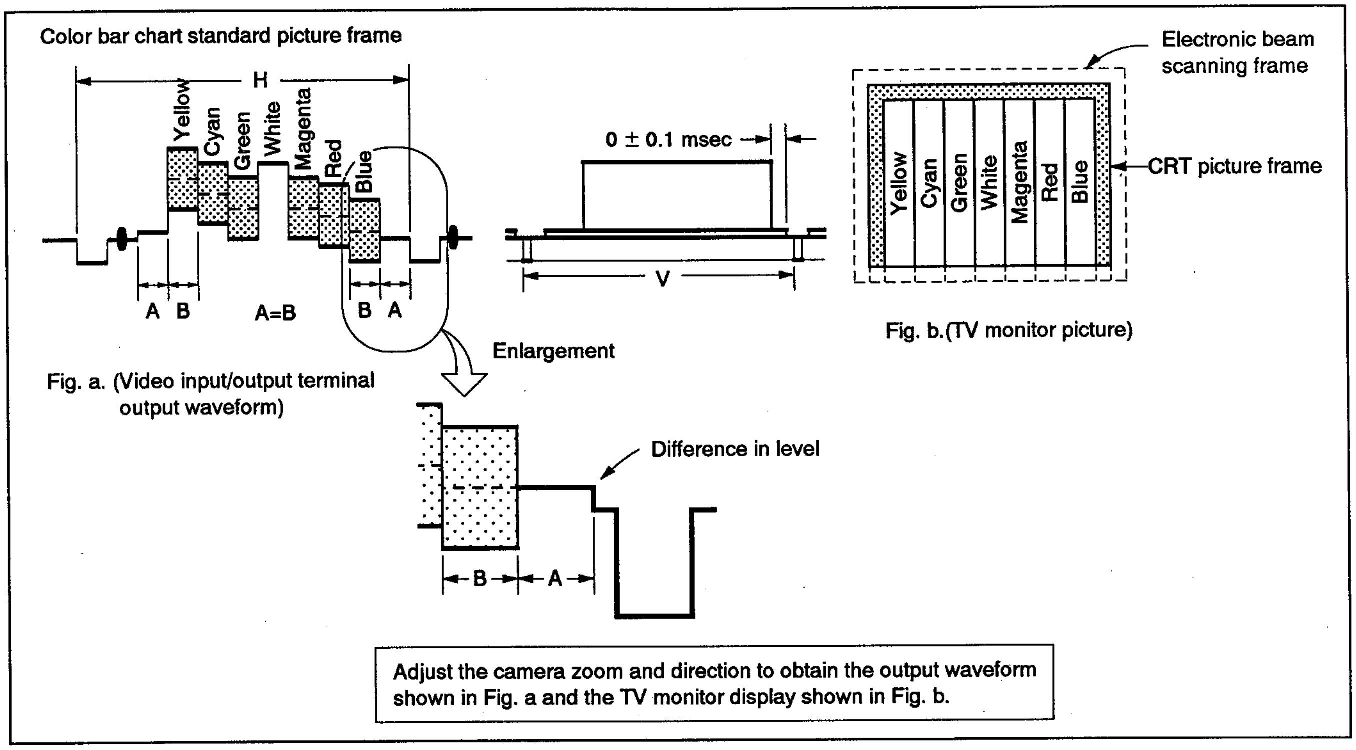

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a. (Video input/output terminal output waveform)

Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 8-4.

3) Chart for flange back adjustment
   Use the siemens star chart.

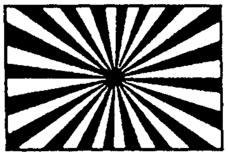


Fig. 8-5.

8-1-4. Adjusting Remote Commander

The camera section is adjusted by changing the constant or coefficient of the digital signal processing calculation, or modifying the output voltage of the EVR IC (VC-134 board IC654). This is controlled by the camera micro processor (VC-134 board IC653), which reads the data written in the nonvolatile memory (VC-134 board IC651: EEPROM), and transmits it to the digital signal processing circuit and EVR.

To perform adjustments, adjustment data written in the nonvolatile memory must be rewritten, using the adjusting remote commander.

The adjusting remote commander uses the remote commander signal line (LANC) to communicate mutually with the camera microprocessor. The page, address and the up/down commands of the data are transmitted from the adjusting remote commander to the camera micro processor. And, the page, address, and data are transmitted for the vice versa.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to CN001 of the VC-134 board using the measuring pin tool for the video section and tool for connecting the adjusting remote commander.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 8-6.

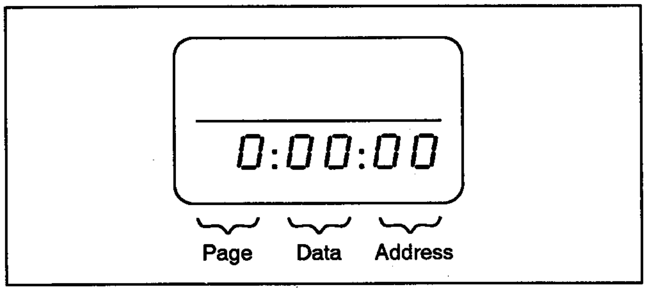


Fig. 8-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 8-1.

   - Changing the address
     The address increases when the FF (▸▸) button is pressed, and decreases when the REW (◂◂) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F, and enables the camera section (Addresses 01 to 97 of page F) to be adjusted.
5) After completing all adjustments, turn off the main power supply (7.2V) once. This releases the adjustment mode (other than page F).

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

8-1-5. Page F Address List

Note 1: The data already listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are values just after executing “Page F Data Initialization” and “Page F Data Modification”. They are different from the values after executing all adjustments.

Note 3: In some cases, data have been input to the page F addresses 98 to FF. This has no relation to the adjustments.

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] contains the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>00</td><td>SET ID</td><td>Set ID</td><td>49</td><td>49</td></tr>
<tr><td>01</td><td>NT PAL</td><td></td><td>10</td><td>10</td></tr>
<tr><td>02</td><td>FT SW</td><td>DDS display mode switching</td><td>00</td><td>00</td></tr>
<tr><td>03</td><td>FADER LEVEL</td><td>AE REF level change in fader</td><td>E0</td><td>E0</td></tr>
<tr><td>04</td><td>FADER END TIME</td><td>AE REF modulation time setting in fader</td><td>10</td><td>10</td></tr>
<tr><td>05</td><td>CORE Y GAIN</td><td>Not used (Camera micro processor versions 1 and 2)
Camera core Y gain (camera micro processor version 3) Note 4</td><td>3F</td><td>3F</td></tr>
<tr><td>06</td><td>VSUB</td><td>CCD imager V SUB voltage adjustment [IC654 ③]</td><td>80</td><td></td></tr>
<tr><td>07</td><td>VPGH</td><td>CCD imager PG voltage adjustment [IC654 ④] Not used</td><td>80</td><td>80</td></tr>
<tr><td>08</td><td>VREF Y</td><td>Camera core Y D/A reference voltage, SYNC level check [IC654 ⑤]</td><td>62</td><td>62</td></tr>
<tr><td>09</td><td>VREF C</td><td>Camera core camera D/A reference voltage, burst level check [IC654 ⑥]</td><td>4E</td><td>4E</td></tr>
<tr><td>0A</td><td>HALL GAIN</td><td>Hall amplifier gain adjustment [IC654 ⑦] } HALL adjustment</td><td>80</td><td></td></tr>
<tr><td>0B</td><td>HALL OFFSET</td><td>Hall amplifier off set adjustment [IC654 ⑧]</td><td>80</td><td></td></tr>
<tr><td>0C</td><td>LOWLIGHT START</td><td>Low illuminance level modulation start setting</td><td>6A</td><td>6A</td></tr>
<tr><td>0D</td><td>REF 2V</td><td>2V reference voltage for hall element [IC654 ⑫]</td><td>68</td><td>68</td></tr>
<tr><td>0E</td><td>AD REF</td><td>Black level during A/D conversion [IC654 ⑬]</td><td>A0</td><td>A0</td></tr>
<tr><td>0F</td><td>CORE DETH</td><td>CCD correction horizontal correlated control</td><td>04</td><td>04</td></tr>
<tr><td>10</td><td>CORE OTHER</td><td>Various camera core mode settings</td><td>50</td><td>50</td></tr>
<tr><td>11</td><td>CORE APCN H</td><td>Horizontal aperture setting</td><td>75</td><td>75</td></tr>
<tr><td>12</td><td>CORE APCN V</td><td>Vertical aperture setting</td><td>3A</td><td>3A</td></tr>
<tr><td>13</td><td>CORE EFFECT</td><td>Camera core special effects control</td><td>A0</td><td>A0</td></tr>
<tr><td>14</td><td>CORE MAT R</td><td>RED matrix constant } Color reproductivity adjustment</td><td>6C</td><td></td></tr>
<tr><td>15</td><td>CORE MAT B</td><td>BLUE matrix constant</td><td>24</td><td></td></tr>
<tr><td>16</td><td>CORE BURST LEVEL</td><td>Burst level setting, color modulation ON/OFF<table><tr><th>Data</th><th>Mode</th></tr><tr><td>2C</td><td>Normal</td></tr><tr><td>2E</td><td>Color modulation stopped</td></tr></table></td><td>2C</td><td>2C</td></tr>
<tr><td>17</td><td>CORE CHROMA DLY</td><td>Y/C delay adjustment</td><td>27</td><td>27</td></tr>
<tr><td>18</td><td>CORE Y SETUP</td><td>Set up level setting</td><td>02</td><td>02</td></tr>
<tr><td>19</td><td>CORE APCN</td><td>Aperture signal level setting</td><td>18</td><td>18</td></tr>
</table>

Table 8-2 (1).

Address	Name	Function [ ] contains the adjustment voltage output terminal		Adjustment data	
				Initial value	Memo column
1A	B–Y HUE	B–Y HUE	Color reproductivity adjustments	FA	
1B	R–Y HUE	R–Y HUE		F1	
1C	R–Y GAIN	R–Y GAIN		49	49
1D	B–Y GAIN	B–Y GAIN		24	24
1E	CS/APCNCUT	Low illuminance aperture and chroma suppress level		22	22
1F	NEXT DEF BIT	CCD imager correction pattern	CCD imager correction data writing	00	
20	CCD DEFECT0	CCD imager correction data		00	
21	CCD DEFECT1	CCD imager correction data		00	
22	CCD DEFECT2	CCD imager correction data		00	
23	CCD DEFECT3	CCD imager correction data		00	
24	CCD DEFECT4	CCD imager correction data		00	
25	CCD DEFECT5	CCD imager correction data		00	
26	CCD DEFECT6	CCD imager correction data		00	
27	CCD DEFECT7	CCD imager correction data		00	
28	CCD DEFECT8	CCD imager correction data		00	
29	CCD DEFECT9	CCD imager correction data		00	
2A	CCD DEFECT10	CCD imager correction data		00	
2B	CCD DEFECT11	CCD imager correction data		00	
2C	CCD DEFECT12	CCD imager correction data		00	
2D	CCD DEFECT13	CCD imager correction data		00	
2E	CCD DEFECT14	CCD imager correction data		00	
2F	CLPFLG	Digital clamp mode setting		02	02
30	ADMIN	Offset minimum value setting		50	50
31	C SHIFT	C shift amount setting		00	00
32	Y SHIFT	Y shift amount setting		00	00
33	LOWLIGHT START2	Low illuminance REF level modulation start setting 2		44	44
34	LOWLIGHT CS	Low illuminance color erasure setting		00	00
35	LOWLIGHT LEVEL			A0	A0
36	DEFECT DELAY			00	00
37	APCN EZOOM	Not used		00	00
38	RG3200 H	3200k Red reference data H	Auto white balance reference data input	40	
39	RG3200 L	3200k Red reference data L		00	
3A	BG3200 H	3200k Blue reference data H		4A	
3B	BG3200 L	3200k Blue reference data L		00	
3C	SPEED S			20	20
3D	SPEED L			20	20
3E	3200 OFFSET			01	01
3F	TRAN SPEED			02	02
40	NORM R	R regular correction coefficient, reference 80h	Auto white balance adjustment	8F	
41	NORM B	B regular correction coefficient, reference 40h		6C	
42	INDOOR S	Indoor determination shutter data		00	00
43	OUTDOOR S	Outdoor determination shutter data		00	00
44	INDOOR L	Indoor determination hall data	IRIS IN/OUT adjustment	36	
45	OUTDOOR L	Outdoor determination hall data		3C	

Table 8-2 (2).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] contains the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>46</td><td>G LEVEL</td><td>High luminance Green integral level</td><td>02</td><td>02</td></tr>
<tr><td>47</td><td>G WIDTH</td><td>High luminance Green integral level range</td><td>03</td><td>03</td></tr>
<tr><td>48</td><td>MAT HUE</td><td>Variable linear matrix HUE coefficient</td><td>00</td><td>00</td></tr>
<tr><td>49</td><td>MAT GAIN</td><td>Variable linear matrix GAIN coefficient</td><td>00</td><td>00</td></tr>
<tr><td>4A</td><td>ADJ RCONT</td><td></td><td>35</td><td>35</td></tr>
<tr><td>4B</td><td>B DIFFERENCE</td><td>Reference difference from outdoor fixed value</td><td>0A</td><td>0A</td></tr>
<tr><td>4C</td><td>BOTTOM SLP R</td><td>Slant R coefficient of drawing frame bottom</td><td>30</td><td>30</td></tr>
<tr><td>4D</td><td>BOTTOM SLP B</td><td>Slant B coefficient of drawing frame bottom</td><td>58</td><td>58</td></tr>
<tr><td>4E</td><td>MIDDLE SLP R</td><td>Slant R coefficient of drawing frame middle</td><td>62</td><td>62</td></tr>
<tr><td>4F</td><td>MIDDLE SLP B</td><td>Slant B coefficient of drawing frame middle</td><td>47</td><td>47</td></tr>
<tr><td>50</td><td>TOP SLP R</td><td>Slant R coefficient of drawing frame top</td><td>6C</td><td>6C</td></tr>
<tr><td>51</td><td>TOP SLP B</td><td>Slant B coefficient of drawing frame top</td><td>1A</td><td>1A</td></tr>
<tr><td>52</td><td>KEIKO R</td><td>Slant R coefficient of drawing frame fluorescent lamp</td><td>66</td><td>66</td></tr>
<tr><td>53</td><td>KEIKO B</td><td>Slant B coefficient of drawing frame fluorescent lamp</td><td>18</td><td>18</td></tr>
<tr><td>54</td><td>BOTTOM UP</td><td>Upper value of drawing frame bottom</td><td>8C</td><td>8C</td></tr>
<tr><td>55</td><td>BOTTOM DWN</td><td>Lower value of drawing frame bottom</td><td>6B</td><td>6B</td></tr>
<tr><td>56</td><td>MIDDLE UP</td><td>Upper value of drawing frame middle</td><td>B8</td><td>B8</td></tr>
<tr><td>57</td><td>MIDDLE DWN</td><td>Lower value of drawing frame middle</td><td>9F</td><td>9F</td></tr>
<tr><td>58</td><td>TOP UP</td><td>Upper value of drawing frame top</td><td>80</td><td>80</td></tr>
<tr><td>59</td><td>TOP DWN</td><td>Lower value of drawing frame top</td><td>66</td><td>66</td></tr>
<tr><td>5A</td><td>KEIKO</td><td>Lower value of output frame fluorescent lamp output</td><td>6C</td><td>6C</td></tr>
<tr><td>5B</td><td>KEIKO DWN</td><td>Lower value of drawing frame fluorescent lamp</td><td>5C</td><td>5C</td></tr>
<tr><td>5C</td><td>R TOP LMT</td><td>Upper value of drawing frame R</td><td>6C</td><td>6C</td></tr>
<tr><td>5D</td><td>R DWN LMT</td><td>Lower value of drawing frame R</td><td>20</td><td>20</td></tr>
<tr><td>5E</td><td>B TOP LMT</td><td>Upper value of drawing frame B</td><td>83</td><td>83</td></tr>
<tr><td>5F</td><td>B IN TOP</td><td>Upper value of INDOOR drawing frame B</td><td>67</td><td>67</td></tr>
<tr><td>60</td><td>B IN MAX</td><td>Upper value of INDOOR output frame B</td><td>5C</td><td>5C</td></tr>
<tr><td>61</td><td>B OUT MIN</td><td>Lower value of OUTDOOR output frame B</td><td>5C</td><td>5C</td></tr>
<tr><td>62</td><td>B OUT DWN</td><td>Lower value of OUTDOOR drawing frame B</td><td>4A</td><td>4A</td></tr>
<tr><td>63</td><td>B DWN LMT</td><td>Lower value of drawing frame B</td><td>20</td><td>20</td></tr>
<tr><td>64</td><td>ADJ BCONT</td><td></td><td>50</td><td>50</td></tr>
<tr><td>65</td><td>T M DIVID</td><td>Border between top and middle of drawing frame</td><td>5B</td><td>5B</td></tr>
<tr><td>66</td><td>B M DIVID</td><td>Border between middle and bottom of drawing frame</td><td>3C</td><td>3C</td></tr>
<tr><td>67</td><td>DELAY TIME</td><td>Auto white balance tracking speed<table><tr><th>Data</th><th>Mode</th></tr><tr><td>0E</td><td>Normal</td></tr><tr><td>01</td><td>High speed drawing</td></tr></table></td><td>0E</td><td>0E</td></tr>
<tr><td>68</td><td>B IN MIN</td><td>INDOOR output frame B bottom</td><td>33</td><td>33</td></tr>
<tr><td>69</td><td>OUT HYS OFF</td><td>OUTDOOR hysteresis off difference</td><td>0C</td><td>0C</td></tr>
<tr><td>6A</td><td>OUT B HYS</td><td>OUTDOOR hysteresis amount</td><td>06</td><td>06</td></tr>
<tr><td>6B</td><td>AWB MODE</td><td>Auto white balance adjustment mode<table><tr><th>Data</th><th>Mode</th></tr><tr><td>00</td><td>Normal</td></tr><tr><td>D0</td><td>AWB adjustment</td></tr><tr><td>F1</td><td>AWB all tracking</td></tr></table></td><td>00</td><td>00</td></tr>
</table>

Table 8-2 (3).

Address	Name	Function [ ] contains the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
6C	IN B HYS		04	04
6D	IN R HYS		02	02
6E	KAKE NORM R		20	20
6F	KAKE NORM B		40	40
70	AE FUNCTION 1	AE functions ON/OFF SW (1)	00	00
71	AE FUNCTION 2	AE functions ON/OFF SW (2)	10	10
72	AE REF 1	AE reference value H	1B	1B
73	HIGH LIGHT LEVEL	High luminance image correction modulation level setting	50	50
74	AE MIN	AGC MAX gain setting } MAX GAIN adjustment	2F	
75	AGC MIN	AGC standard gain setting	D4	D4
76	IRIS MIN	Iris limiter for auto shutter	40	40
77	AE MAX	AE level MAX limiter	A0	A0
78	YAKEI LEVEL	Night view mode AGC MAX limiter	40	40
79	JITEISU DOWN	Loop response time constant (Closed side)	30	30
7A	JITEISU UP	Loop response time constant (Opened side)	10	10
7B	ORETEN SET	Variable point of time constant due to error amount	13	13
7C	OMOMIWAKU 0	Weighting by changing to three frames (Top frame)	40	40
7D	OMOMIWAKU 1	Weighting by changing to three frames (Surrounding frame)	FF	FF
7E	AFC WIDE	Coefficient of ANF integration loop	03	03
7F	AFC GAIN	Loop gain of ANF loop	01	01
80	AFC LIMIL	Limiter for ANF error amount	60	60
81	DELTA GAIN	Gain smoothing amount	08	08
82	ZOOM DROP 1	Light amount correction of lens (Between W and center)	00	00
83	ZOOM DROP 2	Light amount correction of lens (Between center and T)	00	00
84	HIST P KEISU	Fuzzy Hist extraction setting value (P)	40	40
85	HIST H KEISU	Fuzzy Hist extraction setting value (H)	E0	E0
86	HIST L KEISU	Fuzzy Hist extraction setting value (L)	90	90
87	FUZZY JITEISU	Fuzzy exposure correction responses time constant	08	08
88	BAIRITSU P	Hist P rate setting	80	80
89	FUZZY DATA 1	Fuzzy exposure correction data 1	90	90
8A	FUZZY DATA 2	Fuzzy exposure correction data 2	C0	C0
8B	FUZZY DATA 3	Fuzzy exposure correction data 3	B0	B0
8C	FUZZY DATA 4	Fuzzy exposure correction data 4	A0	A0
8D	FUZZY DATA 5	Fuzzy exposure correction data 5	80	80
8E	FUZZY DATA 6	Fuzzy exposure correction data 6	A0	A0
8F	FUZZY DATA 7	Fuzzy exposure correction data 7	98	98
90	FUZZY DATA 8	Fuzzy exposure correction data 8	90	90
91	FUZZY DATA 9	Fuzzy exposure correction data 9	60	60
92	FUZZY DATA 10	Fuzzy exposure correction data 10	40	40
93	HIGH LIGHT START	High luminance image correction modulation start setting	50	50
94	HIGH LIGHT END	High luminance image correction stop setting	88	88
95	IRIS OFFSET	Iris table gain offset	28	28
96	IRIS PWM BIAS	For adjusting iris PWM bias	F6	F6
97	AGC AMP BIAS	For adjusting AGC AMP bias	FE	FE

Table 8-2 (4).

8-1-6. Page 6 Address List

The camera adjustment mode can be set by setting the data in the following table to page 6. (The data of this page can be set temporarily. When the main power supply (7.2V) is turned off, the original values (normal value) are returned. Therefore, these adjustment modes can be released easily by turning off the main power supply.)

(Example) By setting data: 01 to page: 6, address: 00, the write protect of page F, addresses 01 to 97 can be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Page F protect	00	Normal (Protect released)
		01	Protect release of address 01 to 97 of Page F
01	Camera adjustment switch	00	Normal
	Note: To execute this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote commander after setting the data.	01	IRIS OPEN, AGC HOLD
		03	IRIS CLOSE1, AGC HOLD
		05	IRIS CLOSE2, AGC MIN
		07	IRIS CLOSE3, AGC MAX
		09	ND0.5 SHUTTER (PAL=1/160, NTSC=1/190)
		0B	ND0.8 SHUTTER (PAL=1/320, NTSC=1/380)
		0D	AWB STANDARD DATA input
		0F	WB 3200K PRESET: Indoor white balance mode
		11	AWB STANDARD DATA input preparations
		17	1/2000 shutter mode
		19	MAX GAIN adjustment mode
		2F	EEPROM PRE WRITE: Page F initial data writing
02	DDS display switching	00	Normal
		03	HALL DATA display
		04	R ratio display
		05	B ratio display
		0E	LIGHT LEVEL display
03	Weighting on/off	01	Weighting off
		10	Normal (Weighting on)
11	Page F data initialization or AWB STANDARD data input completed display	00	Normal (Data can be initialized or can be input)
		01	Data initialized or Data input completed

Table 8-3.

8-1-7. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated at CN651 of the VC-134 board. Connect the oscilloscope, etc. via the measuring pin tool (J-6082-192-A and J-6082-275-A). The following table lists the pin numbers and the signal names of CN651.

Pin No.	Signal Name
1	NC
2	NC
3	V SUB CHK (Not used)
4	WEN (Not used)
5	GND
6	C OUT
7	GND
8	Y OUT

Table 8-4.

8-1-8. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 8-5. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

②

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① **B (b)**	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 8-5.

8-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-57 board)

Subject	Option
Measuring instrument	Digital voltmeter
D4.9V check	
Measurement point	Pins ㉘ and ㉚ of CN951
Specified value	4.9 ± 0.1 Vdc
D4V check	
Measurement point	Pin ㉓ of CN951
Specified value	3.8 ± 0.1 Vdc
CAM 4.9V check	
Measurement point	Pin ㉙ of CN951
Specified value	4.85 ± 0.1 Vdc
CAM 15V check	
Measurement point	Pin ㉕ of CN951
Specified value	15 ± 0.3 Vdc
CAM –8V check	
Measurement point	Pin ㉗ of CN951
Specified value	–8.0 ± 0.4 Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Check that the data of page: 6, address: 11 is 00. (Display indicating that page F data can be initialized)
2) Set data: 2F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Page F data initialization execution.
   The data of all addresses of page F will be initialized.)
3) Check that the data of page: 6, address: 11 is 01. (Displays that the initialization of page F data has been completed)
4) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit. (Releases the page F data initialization mode)
5) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

Note 1: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Note 2: When changing address: 00 (SET ID), set the data of page: 6, address: 00 to 80.

Address	Data
00 (SET ID)	49
11 (CORE APCN H)	75
12 (CORE APCN V)	3A
13 (CORE EFFECT)	A0
17 (CORE CHROMA DLY)	27
18 (CORE SETUP)	02
19 (CORE APCN)	18
1C (R–Y GAIN)	49
1D (B–Y GAIN)	24
31 (C SHIFT)	00
32 (Y SHIFT)	00
33 (LOW LIGHT START 2)	44
34 (LOW LIGHT CS)	00
35 (LOW LIGHT LEVEL)	A0
3E (3200 OFFSET)	01
67 (DELAY TIME)	0E
82 (ZOOM DROP 1)	00
93 (HIGH LIGH START)	50
96 (IRIS PWM BIAS)	F6
97 (AGC AMP BIAS)	FE

[Distinguishing the Camera Micro Computer (IC653) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 10.

Version	Part Name	Page: 6 Address: 10
Ver.1	SC406814	10

4. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	F
Adjustment	1F to 2E (CCD-DEFECT)

Write the CCD imager correction data in the following cases.

1. When the CCD imager has been replaced
2. When the camera EEPROM (VC-134 boar IC651) has been replaced
3. When the page F data has been initialized

In the case of 1, as the CCD imager for repair does not the correction data, adjust the data of addresses 1F to 2E of page F and those of addresses D4 to E3 of page D to "00".

Writing method:

1) Release the page F protect.
   Page: 6, address: 00, data: 01
2) Set data: 00 to addresses: 1F to 2E of page: F, and press the PAUSE button of the adjusting remote control unit.
3) Release the page D protect.
   Page: 1, address: 00, data: 01
4) Set data: 00 to addresses: D4 to E3 of page: D, and press the PAUSE button of the adjusting remote control unit.

In the case of 2 and 3, read the CCD imager correction data written on addresses D4 to E3 of page D and write them in addresses 1F to 2E.

Writing method:

1) Release the page F protect.
   Page: 6, address: 00, data: 01
2) Read the correction data of addresses D4 to E3 of page: D.
3) Write the correction data to addresses: 1F to 2E of page: F.

Note: To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit before changing addresses.

5. 28 MHz Original Oscillation Adjustment (VC-134 board)

Subject	Not required
Measurement Point	Pin (75) of IC659 (CL)
Measuring Instrument	Frequency counter
Adjusting Element	CT601
Specified Value	14318181 ± 71 Hz

Adjusting method:

1) Use CT601 to adjust the oscillation frequency to 14318181 ± 71 Hz.

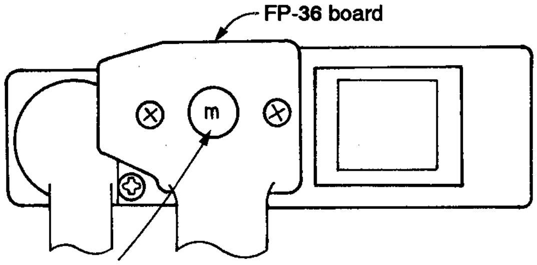
6. V SUB Adjustment (VC-134 board)

Subject	Not required
Measurement Point	Pin ③ of CN651 (V SUB CHK)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	06 (V SUB)
Specified Value	(Imager display voltage) ± 0.05 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 06, and adjust the voltage of pin ③ of CN651 to (imager display voltage) ± 0.05 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

(Example)
When the display is m, the VSUB voltage specified value =10.25 ± 0.05 Vdc.



VSUB voltage code

Voltage Code	Voltage (Vdc)	Data *1	Voltage Code	Voltage (Vdc)	Data *1
–	5.0	40	G	9.0	70
=	5.25	43	h	9.25	73
0	5.5	46	J	9.5	76
1	5.75	49	K	9.75	79
2	6.0	4C	L	10.0	7C
3	6.25	4F	m	10.25	7F
4	6.5	52	N	10.5	82
6	6.75	55	P	10.75	85
7	7.0	58	R	11.0	88
8	7.25	5B	S	11.25	8B
9	7.5	5E	U	11.5	8E
A	7.75	61	V	11.75	91
C	8.0	64	W	12.0	94
d	8.25	67	X	12.25	97
E	8.5	6A	Y	12.5	9A
f	8.75	6D	Z	12.75	9D

*1: The data are reference values.

Fig. 8-7.

7. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of LCD or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0A (HALL GAIN) 0B (HALL OFFSET)
Specified Value	32 to 37 during IRIS OPEN B9 to BD during IRIS CLOSE

Adjusting method:

1) Release the page F protect.
   Page: 6, address: 00, data: 01
2) Release the page D protect.
   Page: 1, address: 00, data: 01
3) Set data: 21 to page: D, address: 21, and press the PAUSE button of the adjusting remote control unit.
   (DDS display mode setting)
4) Set data: 03 to page: 6, address: 02.
   (HALL output display mode setting)
5) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
6) Set data: 40 to page: F, address: 0A, and press the PAUSE button of the adjusting remote control unit.
7) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and set to W_2.
8) Set data: 30 to page: F, address: 0A, and press the PAUSE button of the adjusting remote control unit.
9) Read the DDS display data, and set to W_1.
10) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS OPEN mode setting)
11) Read the DDS display data, and set to K_1.
12) Set data: 40 to page: F, address: 0A, and press the PAUSE button.
13) Read the DDS display data, and set to K_2.
14) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 8-5. "Hexadecimal notation-decimal notation conversion table".)
15) Calculate X_1' using the following equations (decimal notation calculation).
    $A'=W_2'+K_1'-W_1'-K_2'$ ··························Equation 1
    $B'=W_1'-K_1'$ ···Equation 2
    $X_1'=\dfrac{2128+(48\times A')-(16\times B')}{A'}$ ·················Equation 3
16) Convert X_1' to hexadecimal notation, and obtain X_1.
    (Round off to one decimal place)
17) Set data: X_1 to page: F, address: 0A, and press the PAUSE button of the adjusting remote control unit.
18) Change the data of page: F, address: 0B, and adjust the DDS display data to "35".
19) Press the PAUSE button of the adjusting remote control unit.
20) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS CLOSE mode setting)
21) Read the DDS display data, and set to W_0. If W_0 lies within the "B9" to "BD" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
22) Convert W_0 to hexadecimal notation, and obtain W_0'.
23) Calculate X_2' using the following equations (decimal notation calculation).
    $C'=W_0'-B'-53$ ···································Equation 4
    $X_2'=\dfrac{(133-B')\times(X_1'-48)+48\times C'}{C'}$ ···········Equation 5
    (X_1' and B' are values obtained from equations 2 and3)
24) Convert X_2' to hexadecimal notation and obtain X_2.
    (Round off to one decimal place)
25) Set data X_2 to page: F, address: 0A, and press the PAUSE button of the adjusting remote control unit.
26) Change the data of page: F, address: 0B, and adjust the DDS display data to "BA".
27) Press the PAUSE button of the adjusting remote control unit.
28) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS OPEN mode setting)
29) Check that the DDS display data lies within the "32" to "37" range.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 21, and press the PAUSE button of the adjusting remote control unit.
   (Release of DDS display mode)
2) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)
3) Page D protect mode setting.
   Page: 1, address: 00, data: 00

8. Flange Back Adjustment

Subject	Siemens star (30 cm in front of the front glass of the lens)
Measurement Point	Check the operations of the TV monitor
Measuring Instrument	
Tool	No.0 Phillips screwdriver Screwlock (Equivalent to Three Bond #1401B)

Preparations:

1) To loosen the screwlock, rotate the flange back adjusting screw ① several times in the clockwise and counterclockwise directions.
2) Release the page D protect.
(Page: 1, address: 00, data: 01)
3) Set data: 21 to page: D, address: 21, and press the PAUSE button of the adjusting remote commander.
(DDS display mode setting)
4) Set data: 03 to page: 6, address: 02.
(HALL DATA display mode setting)
5) Adjust the luminance of the light on the siemens star so that the HALL DATA displayed on the monitor TV becomes "38" (iris opens).
Adjust the luminance so that this data is always "38" in adjustments hereafter. (so that the iris is open).
6) Set the lens to WIDE and rotate the flange back adjusting screw ① in the counterclockwise direction (○) so that the whole image becomes blurred.

Adjusting method:

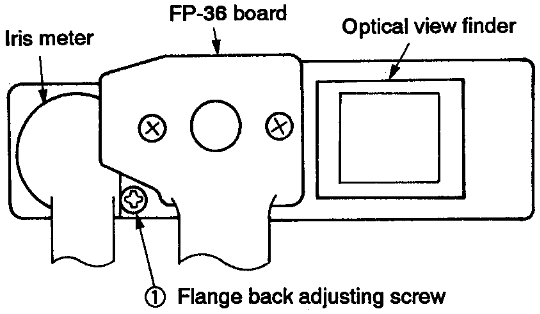
1) Place the siemens star 30 cm in front of the front glass of the lens.
2) Rotate the flange back adjusting screw ① in the clockwise direction (○) until the siemens star is in focus and then stop where the image starts to become blurred.
3) Move the siemens star to and fro and check that the shortest distance that the image starts to become blurred is 30 to 45 cm.
4) Check that the image is clear at a far distance (more than 10m).
5) Set the lens to TELE.
6) Check that the shortest distance that the image starts to become blurred is within 1.8m.
7) Apply screwlock on the flange back adjusting screw ②.
(Refer to the adjustment flowchart.)

Re-Adjusting When Check Specifications were not Satisfied
<When the image becomes blurred at a far distance>
Rotate the flange back adjusting screw in the clockwise direction. If it is rotated excessively, the image will become blurred at a short distance. Therefore rotate it slowly while checking the image.

<When the image becomes blurred at a short distance>
To eliminate the backlash of the adjusting screw, rotate it by more than 90 ° in the counterclockwise direction and then rotate in the clockwise direction. Stop before it reaches its original position. Check that the image is clear at a short distance.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 21, and press the PAUSE button of the adjusting remote commander.
(Release of the DDS display mode)
2) Set data: 00 to page: 1, address: 00.
(Page D protect setting)
3) Set data: 00 to page: 6, address: 02.
(Release of the HALL DATA display mode)



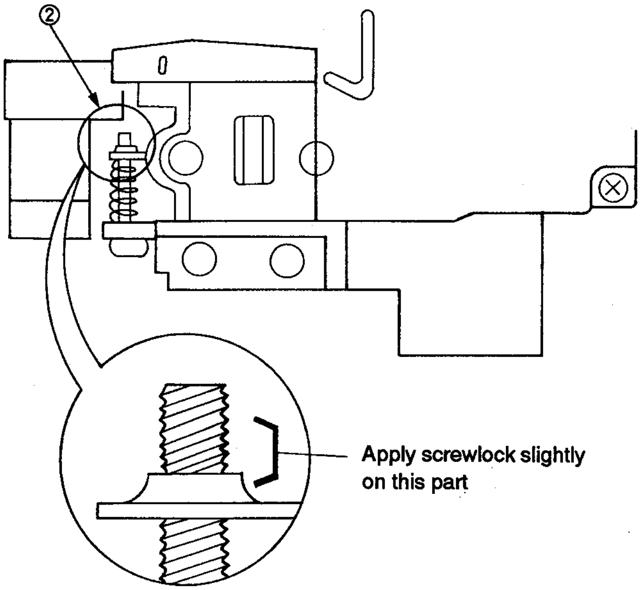


Fig. 8-8.

Flange Back Adjustment Flowchart

◆ Note For Adjustment ◆

The iris must be open at all times

Check

Check that the iris is open

Rotate the screw until the image becomes blurred both at short and far distances

Check that the image is in focus once

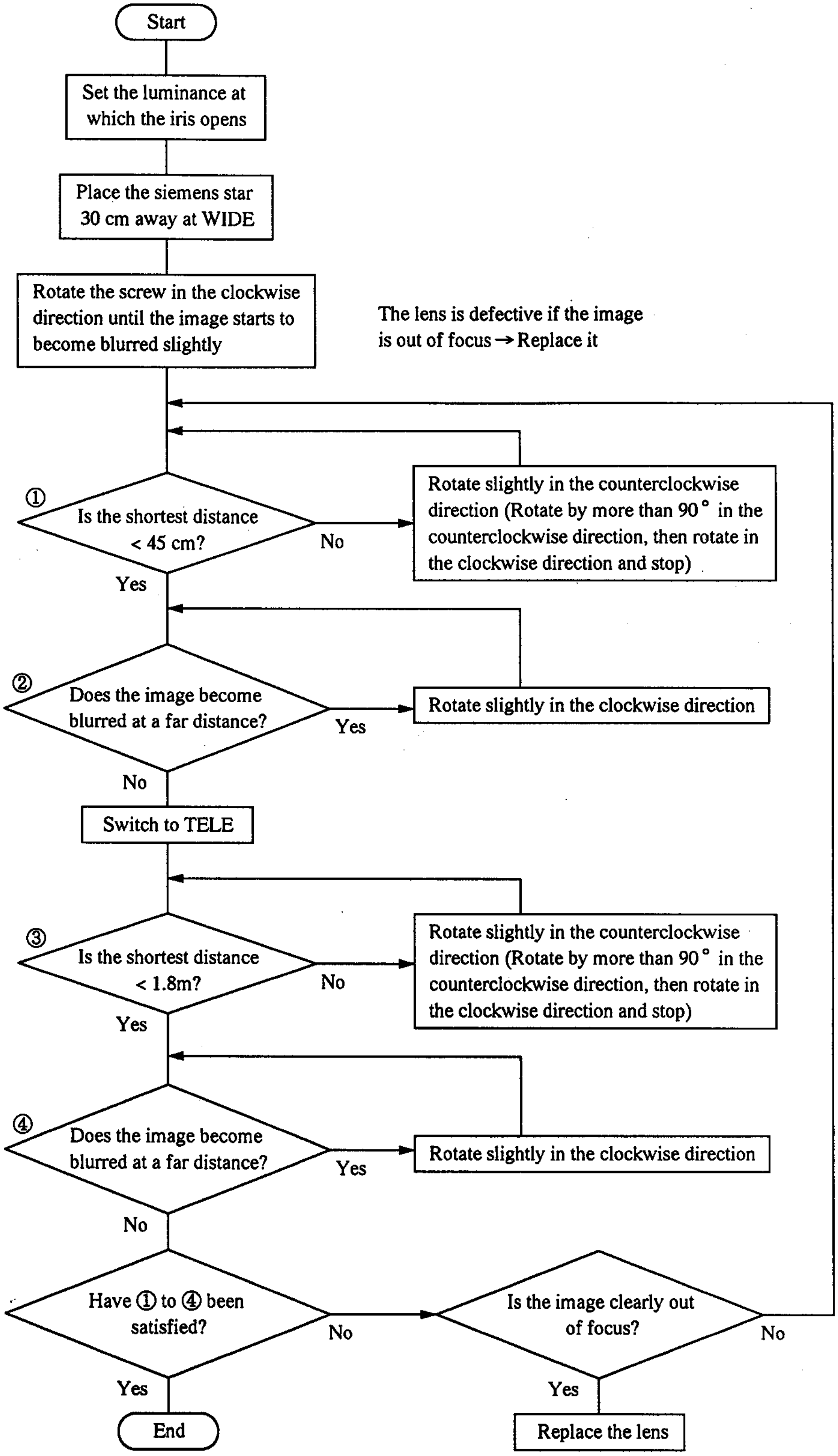
Move the siemens star to and fro and measure the shortest distance (Approx. 30 to 45 cm)

Expose the image at a far distance indoors
(The iris must be open)

Move the siemens star to and fro and measure the shortest distance (Approx. 1 to 1.8m)

Expose the image at a far distance indoors
(The iris must be open)

End if 1 to 4 are satisfied without adjustments


Start
Set the luminance at which the iris opens
Place the siemens star 30 cm away at WIDE
Rotate the screw in the clockwise direction until the image starts to become blurred slightly
The lens is defective if the image is out of focus → Replace it
①
Is the shortest distance < 45 cm?
No
Rotate slightly in the counterclockwise direction (Rotate by more than 90° in the counterclockwise direction, then rotate in the clockwise direction and stop)
Yes
②
Does the image become blurred at a far distance?
Yes
Rotate slightly in the clockwise direction
No
Switch to TELE
③
Is the shortest distance < 1.8m?
No
Rotate slightly in the counterclockwise direction (Rotate by more than 90° in the counterclockwise direction, then rotate in the clockwise direction and stop)
Yes
④
Does the image become blurred at a far distance?
Yes
Rotate slightly in the clockwise direction
No
Have ① to ④ been satisfied?
No
Is the image clearly out of focus?
No
Yes
End
Yes
Replace the lens

9. SYNC Level Check (VC-134 board)

Subject	Not required
Measurement Point	Pin ⑧ of CN651 (Y OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	08 (VREF-Y)
Specified Value	A=140 ± 30 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Check that the SYNC level (A) satisfies the specified value. If not, change the data of page: F, address: 08, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

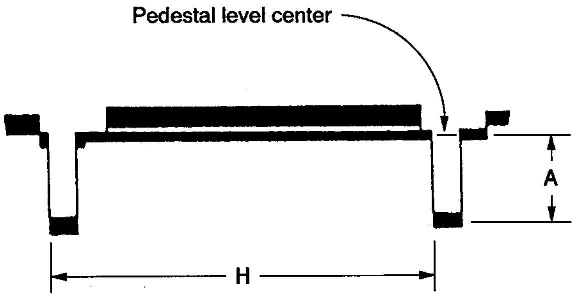


Fig. 8-9.

10. BURST Level Check (VC-134 board)

Subject	Not required
Measurement Point	Pin ⑥ of CN651 (C OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	09 (VREF-C)
Specified Value	A=140 ± 15 mVp-p

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Check that the Burst level (A) satisfies the specified value. If not, change the data of page: F, address: 09, and adjust so that the burst level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

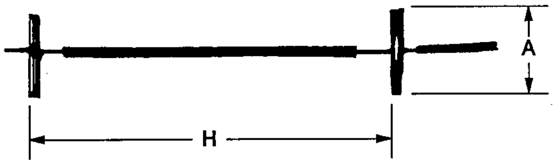


Fig. 8-10.

11. Picture Frame Setting

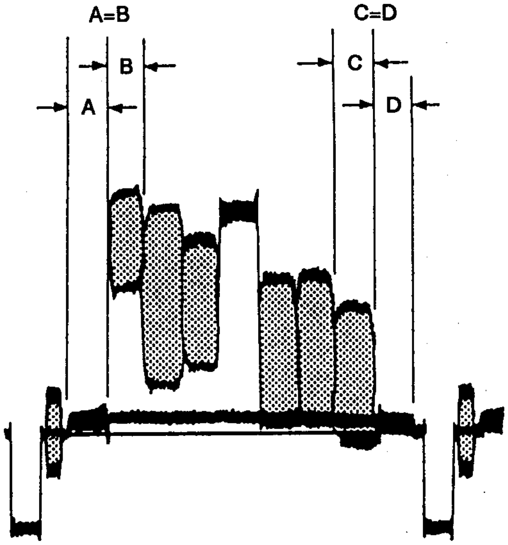
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Setting method:

1) Adjust the camera direction and the distance of the color bar chart, and set to the specified picture frame setting.
2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

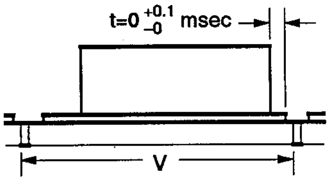

$t=0^{+0.1}_{-0}$ msec
V

Fig. 8-11.

Check on the TV monitor

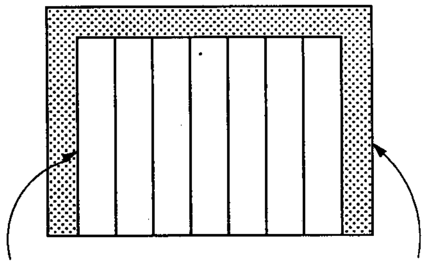

Color bar chart picture frame
TV monitor picture frame

Fig. 8-12.

12. IRIS IN/OUT Adjustment (VC-134 board)

Subject	White pattern
Measurement Point	DDS display of LCD or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	44 (IRIS IN) 45 (IRIS OUT)

Adjusting method:

1) Release the page F protect.
   Page: 6, address: 00, data: 01
2) Release the page D protect.
   Page: 1, address: 00, data: 01
3) Set data: 21 to page: D, address: 21, and press the PAUSE button of the adjusting remote commander.
   (DDS display mode setting)
4) Set data: 0E to page: 6, address: 02.
   (LIGHT LEVEL display mode setting)
5) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (ND0.8 SHUTTER mode setting)
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to a decimal number and obtain D_1'. (Refer to Table 7-6. "Hexadecimal Notation-Decimal Notation Conversion Table".)
8) Calculate D_3' using the following equations. (Equations 1 and 2 are for decimal notation calculation)
   When $D_2 \geqq D0$
   $D_3'=D_1'-21$ ································Equation 1
   When $D_2 < D0$
   $D_3'=D_1'-22$ ································Equation 2
9) Convert D_3' to a hexadecimal number and obtain D_3.
10) Set D_3 to page: F, address: 44, and press the PAUSE button of the adjusting remote commander.
11) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
    (IND0.5 SHUTTER mode setting)
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to a decimal number and obtain D_4'. (Refer to Table 8-5. "Hexadecimal Notation-Decimal Notation Conversion Table".)
14) Calculate D_6' using the following equations. (Equations 3 and 4 are for decimal notation calculation)
    When $D_5 \geqq F0$
    $D_6'=D_4'-13$ ·····································Equation 3
    When $D_5 < F0$
    $D_6'=D_4'-14$ ·····································Equation 4
15) Convert D_6' to a hexadecimal number and obtain D_6.
16) Set D_6 to page: F, address: 45, and press the PAUSE button of the adjusting remote commander.

Note 1: The right four digits of the display data at the right bottom side of the LCD and monitor TV is the LIGHT LEVEL data. If the lower digits change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the average value.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 21, and press the PAUSE button of the adjusting remote commander.
   (Release of the DDS display mode)
2) Set data: 00 to page: 1, address: 00.
   (Page D protect setting)
3) Set data: 00 to page: 6, address: 00, and press the PAUSE button of the adjusting remote commander.
   (Release of the ND0.5 SHUTTER mode)
4) Set data: 00 to page: 6, address: 02.
   (Release of the LIGHT LEVEL display mode)

13. MAX GAIN Adjustment (VC-134 board)

Subject	White pattern standard picture frame
Measurement Point	Pin ⑧ of CN651 (Y OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	74 (AE MIN L)
Specified Value	When the lens is set to WIDE A=230 ± 10 mV When the lens to set to TELE A=130 ± 10 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 19 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (MAX GAIN adjusting mode setting)
3) Change the data of page: F, address: 74, and adjust so that the Y OUT signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the MAX GAIN adjusting mode)

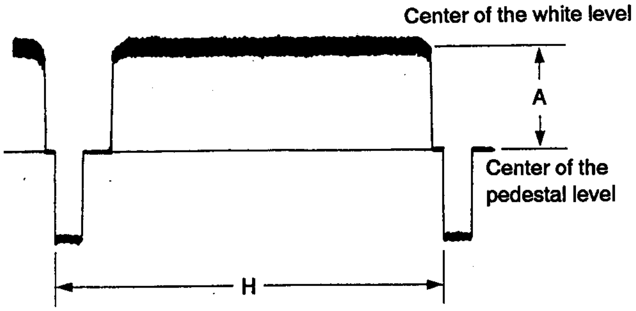


Fig. 8-13.

14. Color Reproduction Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	14 (CORE R MAT), 15 (CORE B MAT), 1A (B–Y HUE), 1B (R–Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 00 to page: 6, address: 03.
   (Weight OFF mode setting)
3) Set data: 00 to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.
4) Set data: F1 to page: F, address: 6B, and press the PAUSE button of the adjusting remote control unit.
5) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
6) Change the data of addresses 14, 15, 1A and 1B of page: F, and settle each color luminance point in each color reproduction frame.

   Note 1: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not be written to the memory.

   Note 2: The data of address: 14 (CORE R MAT) should be 58 to 7F.
   The data of address: 15 (CORE B MAT) should be 1C to 2C.
7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 01 to page: F, address: 3E and press the PAUSE button of the adjusting remote control unit.
   (Release of the adjustment mode)
2) Set data: 00 to page: F, address: 6B and press the PAUSE button of the adjusting remote control unit.
3) Set data: 10 to page: 6, address: 03.
   (Weight ON mode setting)

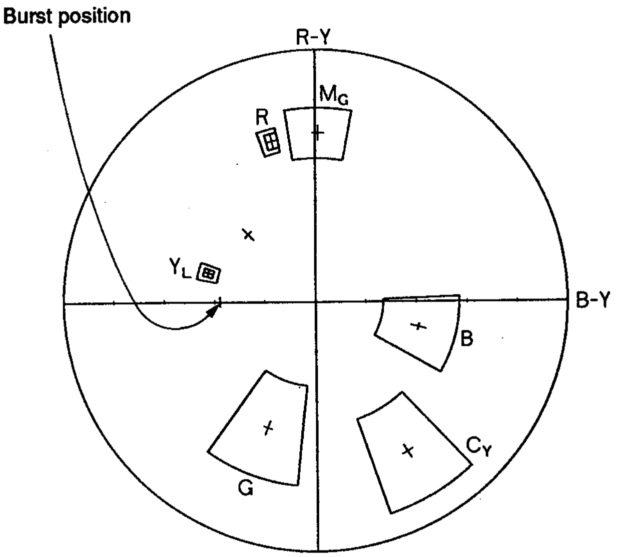


Fig. 8-14.

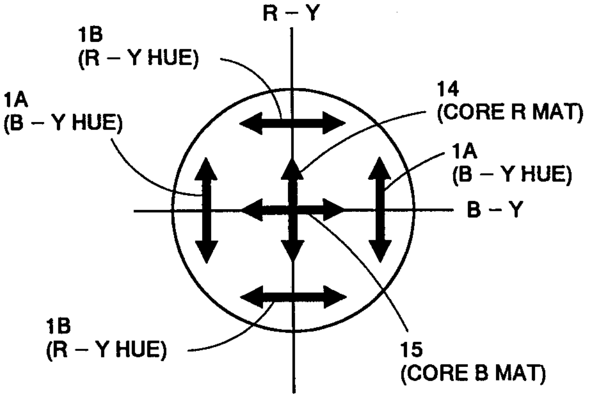


Fig. 8-15. Direction of the Movements of the Adjustment Address and Luminance Point

15. Auto White Balance Standard Data Input

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	38 (RG32000 H), 39 (RG3200 L), 3A (BG32000 H), 3B (BG3200 L)

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Check that the data of page: 6, address: 11 is 00.
   (Auto white balance standard data input possible display)
3) Wait for 2 seconds.
4) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
5) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (When the standard data is taken in, the data will be automatically input to addresses 38 to 3B of page F.)
6) Check that the data of page: 6, address: 11 is 01.
   (Auto white balance standard data input completion display)

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance standard data input mode)

16. Auto White Balance Adjustment

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the LCD or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	40 (NORM R) 41 (NORM B)
Specified Value	R ratio 2A80 ± 40 B ratio 5B80 ± 40

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Release the page D protect.
   Page: 1, address: 00, data: 01
3) Set data: 21 to page: D, address: 21, and press the PAUSE button of the adjusting remote control unit.
   (DDS display mode setting)
4) Release the page F protect.
5) Set data: D0 to page: F, address: 6B, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance adjustment mode setting)
6) Set data: 04 to page: 6, address: 02.
   (R ratio display mode setting)
7) Change the data of page: F, address: 40, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2A80 ± 40.
8) Press the PAUSE button of the adjusting remote control unit.
9) Set data: 05 to page: 6, address: 02.
   (B ratio display mode setting)
10) Change the data of page: F, address: 41, and adjust the average value of the DDS display data to 5B80 ± 40.
11) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 6B, and press the PAUSE button of the adjusting remote control unit.
   (Release of the white balance adjustment mode)
2) Set data: 00 to page: D, address: 21, and press the PAUSE button of the adjusting remote control unit.
   (Release of DDS display mode.)
3) Set data: 00 to page: 6, address: 02.
   (Release of B ratio display mode)
4) Page D protect mode setting.
   Page: 1, address: 00, data: 00

17. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 8-16. A to C

Checking method:
1) Check that the lens is not covered with either filter.
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
4) Check that the center of the white luminance point is within the circle shown in Fig. 8-16.A.
   (Indoor white balance check)
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance mode setting)
6) Set data: 01 to page: F, address: 67, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance high speed tracking mode setting)
7) Check that the center of the white luminance point is within the circle shown in Fig. 8-16. A.
8) Place the C14 filter on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 8-16. B.
   (Auto white balance outdoor mode check)
10) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
11) Check that the center of the white luminance point settles in the circle shown in Fig. 8-16. C.
   (Auto white balance outdoor mode check)

Processing after completing adjustments
1) Set data: 0E to page: F, address: 67, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance fast tracking mode)
2) Set data: 00 to page: 6, address: 01, and press the PAUSE button.

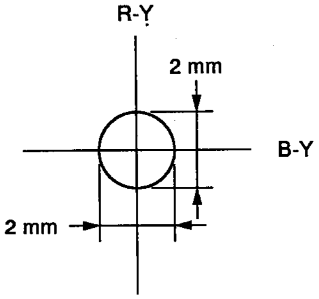


Fig. 8-16. A

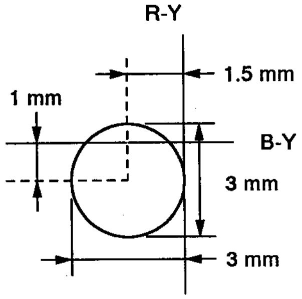


Fig. 8-16. B

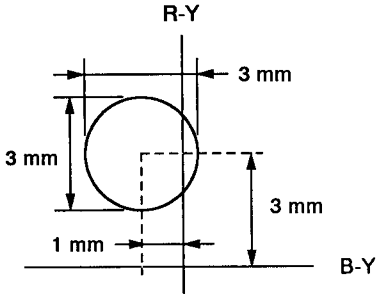


Fig. 8-16. C

18. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=650 ± 15 mV SYNC level=286 ± 5 mV

Checking method:

1) Check that the Y level and SYNC level satisfy the specified values.

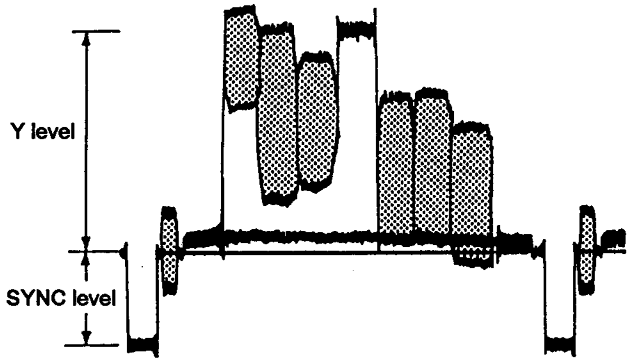
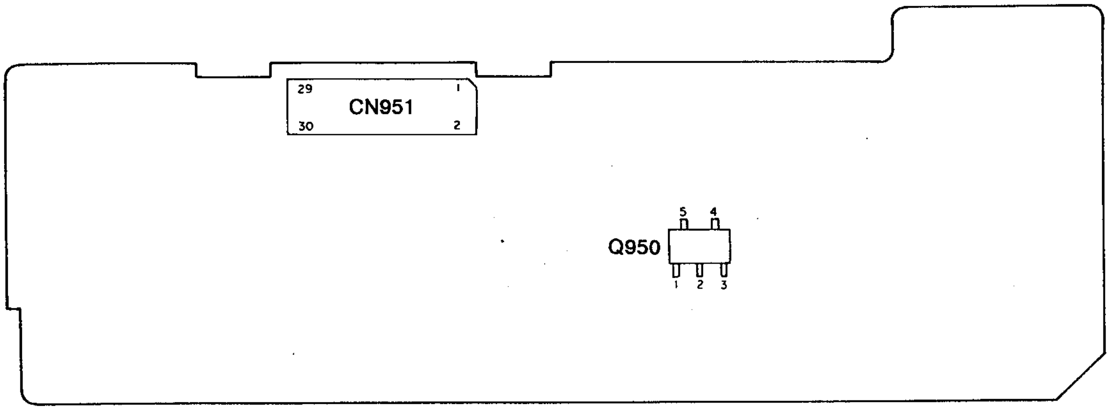


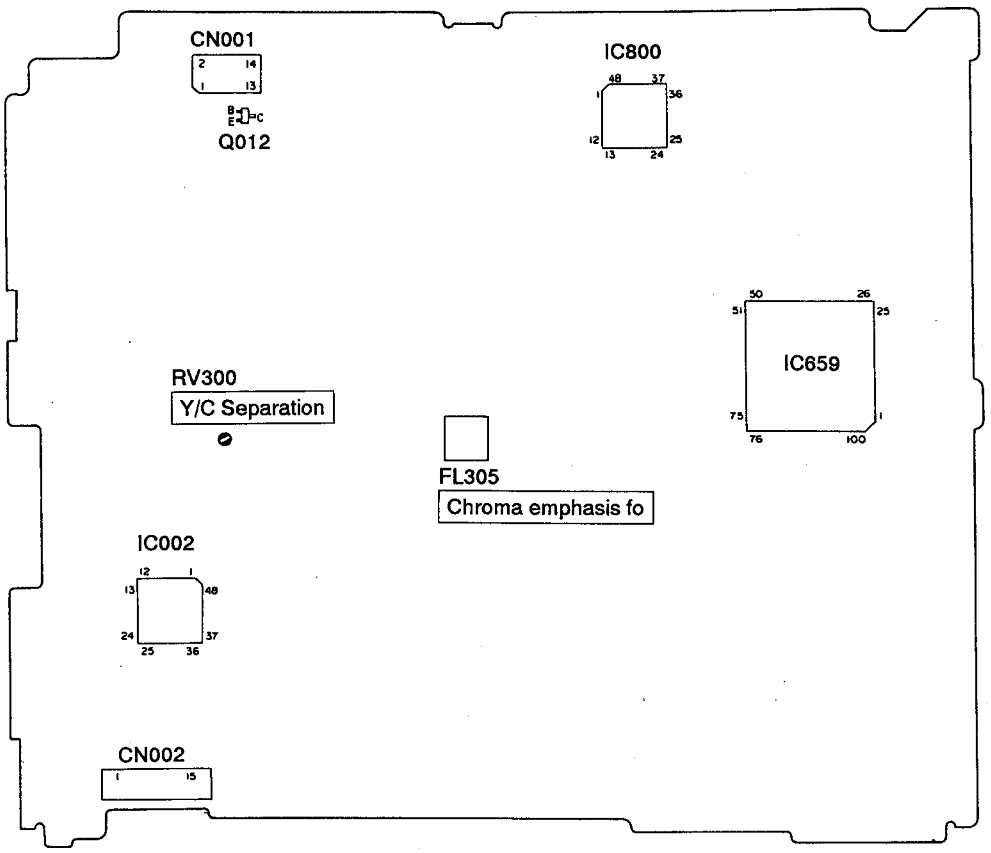
Fig. 8-17.

8-3. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

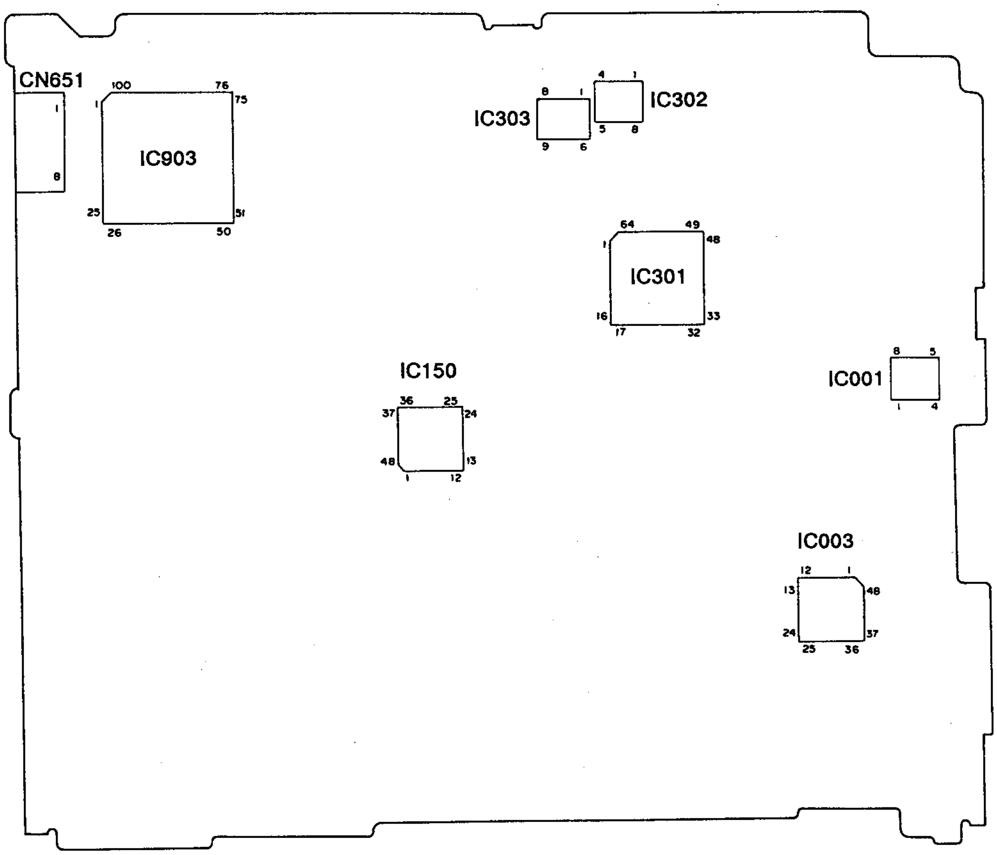
DD-57 BOARD (CONDUCTOR SIDE)


29
1
CN951
30
2
Q950
5
4
1
2
3

VC-134 BOARD (COMPONENT SIDE)


CN001
2
14
1
13
B
E
C
Q012
IC800
48
37
1
36
12
25
13
24
50
26
51
25
IC659
75
1
76
100
RV300
Y/C Separation
FL305
Chroma emphasis fo
IC002
12
1
13
48
24
37
25
36
CN002
1
15

VC-134 BOARD (CONDUCTOR SIDE)


CN651
1
8
100
76
1
75
IC903
25
51
26
50
8
1
IC303
9
6
4
1
5
8
IC302
64
49
1
48
IC301
16
33
17
32
IC150
36
25
37
24
48
13
1
12
8
5
IC001
1
4
IC003
12
1
13
48
24
37
25
36

SECTION 9
MECHANICAL SECTION ADJUSTMENTS

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume-"8 mm Video Mechanism Adjustment Manual VI TK Mechanism ".

9-1. OPERATING WITHOUT A CASSETTE

1) Refer to "2. DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to CN001 of the VC-134 board using the measuring pin tool for the video section (J-6082-140-A) and the tool for connecting the adjusting remote commander (J-6082-276-A).
   (For details of connecting them, refer to "10-1-2. Connecting the Equipment" of "10. VIDEO SECTION ADJUSTMENT".)
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Set data: 01 to page: 1, address: 00.
   (Release of the protect)
6) Set data: 01 to page: D, address: 01, and press the PAUSE button of the adjusting remote commander.
   (Emergency prohibition mode setting)
7) Set data: 04 to page: D, address: 21, and press the PAUSE button of the adjusting remote commander.
   (Sensor ineffective mode setting)

By carrying out the above procedure, the unit can be operated without loading a cassette.

Be sure to carry out "Processing after Operations" after checking the operations.

Set the data of page: D, address: 21 to the following if the sensor ineffective mode, forced VTR power supply ON mode or forced camera power supply ON mode are to be used together.

Forced VTR power supply ON mode·········06
Forced camera power supply ON mode······05

[Processing after Operations]

1) Set data: 01 to page: 1, address: 00.
   (Release of protect)
2) Set data: 00 to page D, address: 01, and press the PAUSE button of the adjusting remote commander.
   (Release of the emergency prohibition mode)
3) Set data: 04 to page: D, address: 21, and press the PAUSE button of the adjusting remote commander.
   (Release of the sensor ineffective mode)
4) Set data: 00 to page: 1, address: 00.
   (Protect setting)
5) Disconnect the power supply of the unit.

9-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to CN001 of the VC-134 board using the measuring pin tool for the video section (J-6082-140-A) and the tool for connecting the adjusting remote commander (J-6082-276-A).
   (For details of connecting them, refer to "10-1-2. Connecting the Equipment" of "10. VIDEO SECTION ADJUSTMENT".)
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 1, address: 00, and set data: 01.
   (Release of the protect)
5) Select page: D, address: 01, and set data: 03.
   (Set the track shift mode. The adjusting remote commander can be disconnected if its PAUSE button of remote commander is pressed. In this case, be sure to perform "Processing after operations" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1-Pin ⑭ of CN001 of VC-134 board
   External trigger-Pin ⑨ of CN001 of VC-134 board
   (Connect the oscilloscope via the measuring pin tool for the video section (J-6082-140-A).)
7) Playback the alignment tape (WR5-1NP) for tracking.
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment Manual VI (TK Mechanism).
9) Perform "Processing after operations", after completing adjustments.

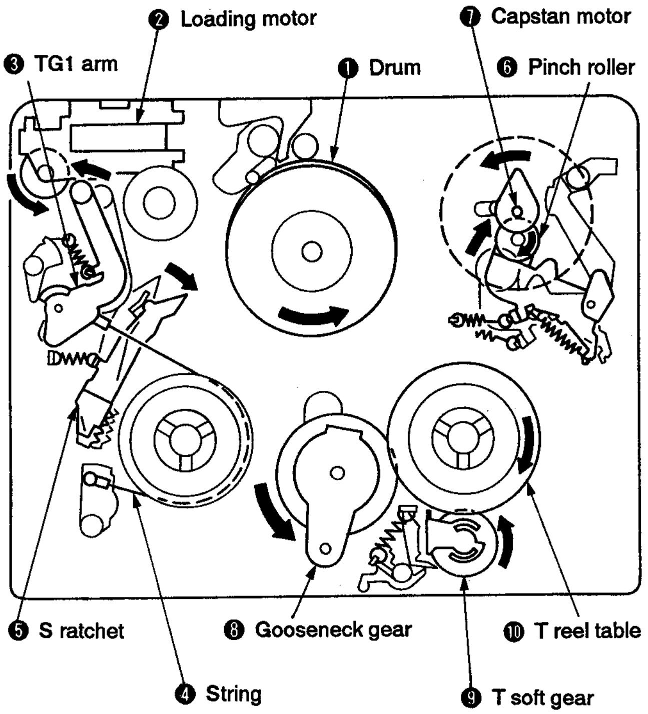
CN001 of VC-134 board

1	LANC SIG
2	LANC DC
3	GND
4	CAP FG
5	REC 1B
6	REC 2B
7	REC 1A
8	REC 2A
9	RF SWP
10	$\overline{\text{1/2 RF SWP}}$
11	PB RF CH1
12	PB RF CH2
13	RF GND
14	PB RF OUT

[Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 1, address: 00, and set data: 01.
3) Select page: D, address: 01, and set data: 00.
4) Press the PAUSE button of the adjusting remote commander.
5) Remove the power supply from the unit.

Mechanical Section Opeations during STOP → PLAY



SECTION 10

VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 228.

10-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

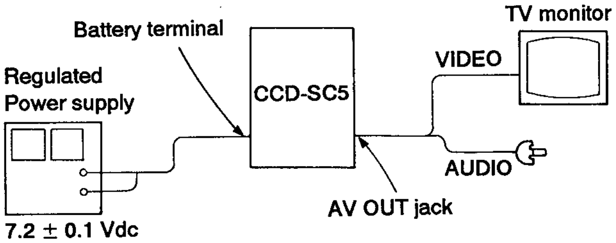
10-1-1. Equipments to be used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    For tracking adjustment (WR5-1NP)
    Part Code: 8-967-995-02
    For video frequency characteristics adjustment (WR5-6N)
    Part Code: 8-967-995-12
    For checking operations
    (WR5-4NL)$^{\text{Note 1}}$
    Part Code: 8-967-995-51
    (WR5-5NSP)$^{\text{Note 2}}$
    Part Code: 8-967-995-42
    Note: The following alignment tapes can also be used.
    1) WR5-3NL (8-967-995-31)
    2) WR5-4NSP (8-967-995-41)
12) Remote control unit for adjustment (J-6082-053-A)
13) Battery terminal extension cord (3P, 1.5 mm)
    Part Code: J-6082-913-A
14) DD-57 board extension cord (30P, 0.8 mm)
    Part Code: J-6082-189-A
15) Measuring pin for video section
    Part Code: J-6082-140-A
16) SD-10 board extension cord (28P, 0.8 mm)
    Part Code: J-6082-174-A
17) SD-10 board extension cord (2P, 1.5 mm)
    Part Code: J-6082-080-A
18) Tool for connecting the adjusting remote commander
    Part Code: J-6082-276-A

10-1-2. Connecting the equipments

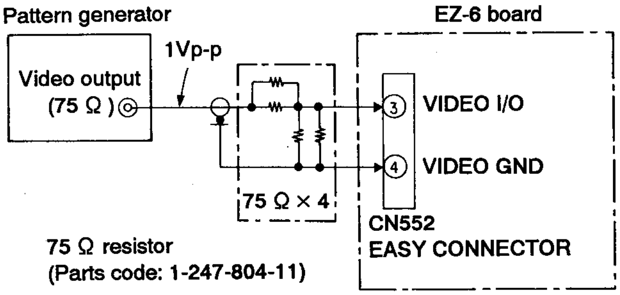
Unless specified otherwise, connect the measuring instruments as shown in Fig. 10-1. and perform the adjustments.

- Camera/player power switch ········player

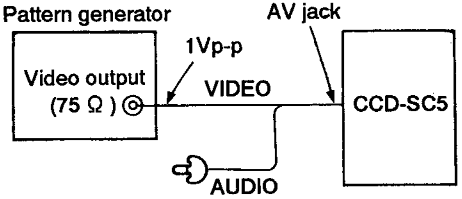

Battery terminal
TV monitor
Regulated Power supply
CCD-SC5
VIDEO
AUDIO
AV OUT jack
7.2 ± 0.1 Vdc

- Connect the pattern generator as shown in the following figure.

[Easy Connector Inputs]


Pattern generator
EZ-6 board
Video output (75 Ω)
1Vp-p
③ VIDEO I/O
④ VIDEO GND
75 Ω × 4
CN552
EASY CONNECTOR
75 Ω resistor
(Parts code: 1-247-804-11)

[AV Jack Inputs]


Pattern generator
AV jack
1Vp-p
Video output (75 Ω)
VIDEO
CCD-SC5
AUDIO

Note 1: Disconnect the connections for inputting signals to the easy connector.

Note 2: The TV monitor cannot be connected. Monitor using the LCD display.

- Connect the adjusting remote commander using the measuring pin tool for the video section (14P) and the tool for connecting the adjusting remote commander. These tools are shown in the following table.

Tool for Connecting the Adjusting Remote Commander (Clip)	Measuring Pin Tool for Video Section
White	Pin ① (LANC SIG)
Red	Pin ② (LANC DC)
Black	Pin ③ (GND)

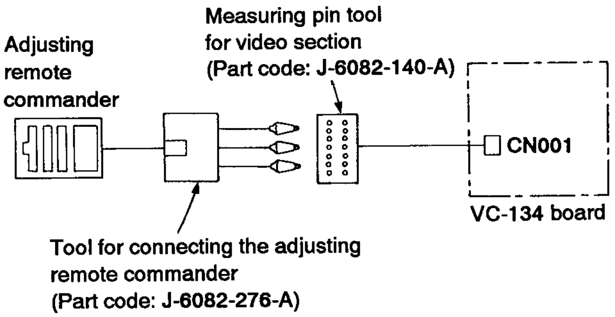

Adjusting remote commander
Measuring pin tool for video section
(Part code: J-6082-140-A)
CN001
VC-134 board
Tool for connecting the adjusting remote commander
(Part code: J-6082-276-A)

Fig. 10-1.

10-1-3. Precautions For Adjustments

1) The lens block (FP-36, TL-41, MA-172 boards) is not required in the adjustments of the video section. When not using it, disconnect the following four connectors.
   1. CN652 of the VC-134 board (8P, 0.8 mm)
   2. CN601 of the VC-134 board (20P, 0.5 mm)
   3. CN550 of the MA-172 board (5P, 0.8 mm)
   4. Connector of the cabinet (top) (CF-36 board) (4P, 0.8 mm)
2) The SD-10 board of the main cabinet (rear) is only required for connecting the LCD block. When not using it, disconnect the following two connectors.
   1. CN903 of the VC-134 board (28P, 0.5 mm)
   2. CN952 of the DD-57 board (2P, 1.5 mm)

   To extend the SD-10 board of the main cabinet (rear), use the following two extension cords.
   1. J-6082-174-A (28P, 0.8 mm)
      For extension between CN903 of the VC-134 board and the FP-62 board (CN202 of the SD-10 board)
   2. J-6082-080-A (2P, 1.5 mm)
      For extension between CN952 of the DD-57 board and CN201 of the SD-10 board
3) To extend the DC/DC converter (DD-57 board), use the following extension cord.
   1. J-6082-189-A (30P, 0.8 mm)
      For extension between CN205 of the VC-134 board and CN951 of the DD-57 board
4) To extend the battery pin (main cabinet (front)), use the following extension cord.
   1. J-6082-913-A (3P, 1.5 mm)
5) The cabinet (top) (CF-36 board: Power supply switch) need not be connected if the forced VTR power supply ON mode (Note 1) is set. To remove it, disconnect the following connector.
   1. CN902 of the VC-134 board.

   After completing adjustment, be sure to exit this mode. (Note 2)

Note 1: Setting the Forced VTR Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
   (Release of the page D protect)
2) Set data: 02 to page: D, address: 21, and press the PAUSE button of the adjusting remote commander.
   (Forced VTR power supply ON mode setting)
   By carrying out the above, the VTR can be operated even if the cabinet (top) has been removed. Be sure to exit the forced VTR power supply ON mode after completing the adjustment.

Note 2: Exiting the Forced VTR Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
   (Release of the page D protect)
2) Set data: 00 to page: D, address: 21, and press the PAUSE button of the adjusting remote commander.
   (Release of the forced VTR power supply ON mode)
3) Set data: 00 to page: 1, address: 00.
   (Page D protect setting)

10-1-4. How to Set the REC Mode

1) REC key forbidden accept mode cancel
   1. Connect the adjusting remote controller to CN001 on VC-134 board.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjusting remote controller.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to 4B [6B].$^{\text{Note 1}}$ (REC key forbidden accept mode cancel)
   6. Press PAUSE button on the adjusting remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2) REC mode setting

   [Easy Connector Inputs]
   1. Turn off the HOLD switch of the adjusting remote controller.
   2. Press REC buttons of the adjusting remote controller.
   3. Perform "3. Procedure after completed the adjustment", after completing adjustment.

   [AV Jack Inputs]
   1. Turn on the HOLD switch of the adjusting remote controller.
   2. Select the page: 2 address: 00, and set data to 00.
   3. Select the page: 2 address: 0C, and set data to BF. (Line input mode setting)
   4. Turn off the HOLD switch of the adjusting remote controller.
   5. Press REC buttons of the adjusting remote controller.
   6. Perform "3. Procedure after completed the adjustment" and turn off the power, after completing adjustment.

3) Procedure after completed the adjustment

   Be sure to return the mode to REC key forbidden accept mode after adjustment.
   1. Connect the adjusting remoter controller to CN001 on VC-134 board.
   2. Turn on the power.
   3. Turn on HOLD switch of the adjusting remote controller.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to 4A [6A].$^{\text{Note 1}}$ (Setting of the REC key forbidden accept mode)
   6. Press PAUSE button on the adjusting remote controller. (Write to the non-volatile memory)
   7. Turn off the power.

Note 1: No mark : US, Canadian Model
[ ] : E model

10-1-5. Connectors for adjustments (VC-134 board CN001)

Some video section adjustment points are concentrated on the VC-134 board CN001. Connect the measuring instrument via a measuring pin jig (J-6082-140-A).

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	2	LANC DC
3	RF GND	4	CAP FG
5	REC 1B	6	REC 2B
7	REC 1A	8	REC 2A
9	RF SWP	10	$\overline{\text{1/2 RF SWP}}$
11	PB RF CH1	12	PB RF CH2
13	RF GND	14	PB RF OUT

Table 10-1.

10-1-6. Set-up during Adjustment

Note: The [ ] contains the measuring points and specified values for AV jack inputs.

As the video signal obtained from the pattern generator is used as an adjustment signal during electric adjustments, ensure that this video output signal is within the specification. Connect the oscilloscope to pin ③ of CN552 on the EZ-6 board [pin ⑧ of W300 on JK-109 board], and check that the amplitude of the sync signal of the video signal is 0.143V [0.286V], the amplitude of the video section is 0.357V [0.714V], the amplitude of the burst signal is 0.143V [0.286V] and flat, and that the level ratio of the burst signal and the red signal is 0.30: 0.66. The video signal (color bar) used for electric adjustments is shown in Fig. 10-2.

Note: Set the REC mode and check the signal level.

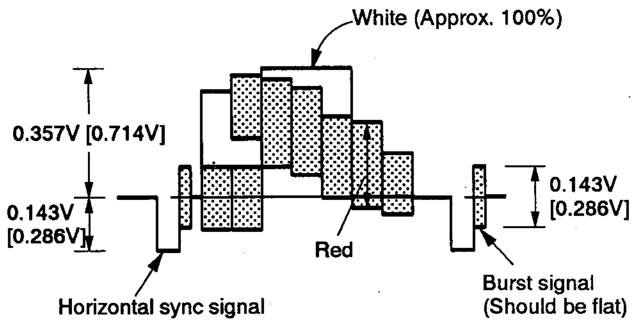


Fig. 10-2. Color Bar Signal of the Pattern Generator

10-1-7. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.

If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record-ing mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1NP	L	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-6N	L	MP	SP	RF sweep 0 to 10 MHz Marker 1, 3.58, 5.5, 7 MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-5NSP	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Repeated 4 times } Color bar section 1 kHz 4 minutes	Checking operations
Operation check (LP mode) WR5-4NL	L	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		

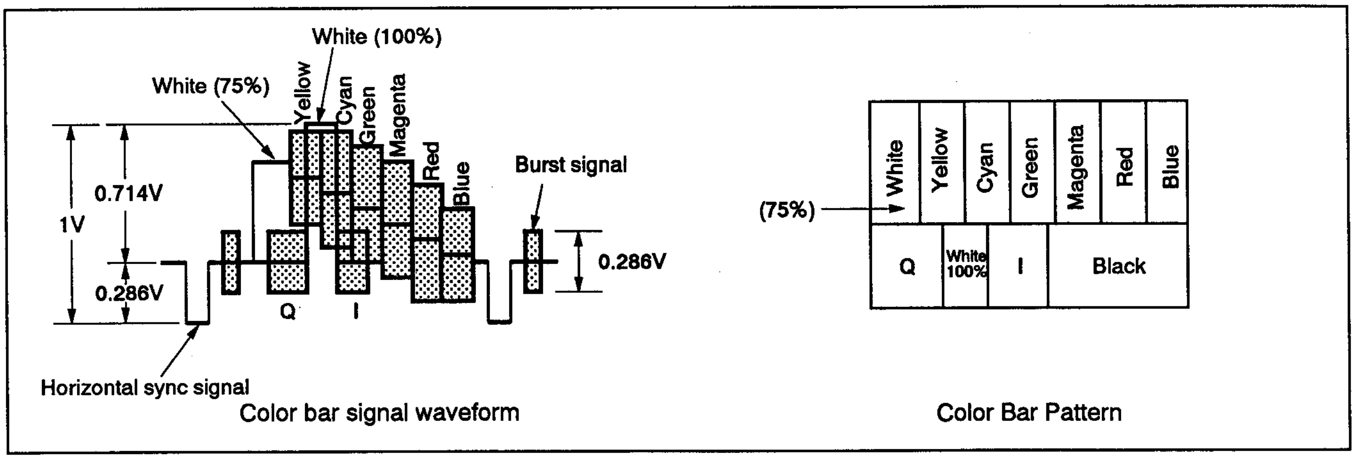
Note: Recording mode
L ·············· Conventional mode
E ·············· hi8 (hi band) mode

Tape type
MP············ Particle type metal tape
ME············ Evaporated type metal tape

Table 10-2.

Fig. 10-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the AV jack video output terminal (Terminated at 75 Ω)


White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
0.714V
1V
0.286V
0.286V
Q
I
Horizontal sync signal
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
White 100%
I
Black

Color bar signal waveform

Color Bar Pattern

Fig. 10-3. Color Bar Signals of the Alignment Tape

10-1-8. Output Level and Impedance

AV output	Mini jack
Video output	Stereomini-jack, 1 Vp-p, 75Ω , unbalanced, sync negative
Audio output	Stereomini-jack, –7.5 dBs, (at load impedance 47 kΩ) impedance less than 2.2 kΩ

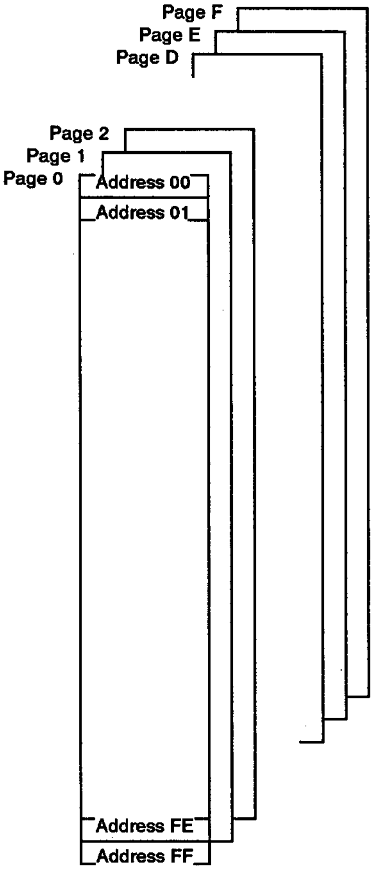
10-1-9. Service Mode

1. Setting the service mode

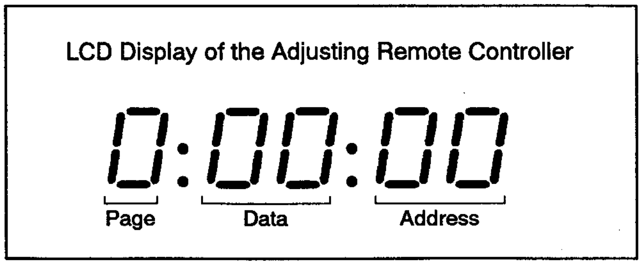
The service mode consists of the adjustment mode which adjusts the EVR and the test mode which shows the condition of the unit.

The unit can be set into the test mode and adjustment mode by connecting the adjusting remote commander (Set the HOLD switch to "HOLD").

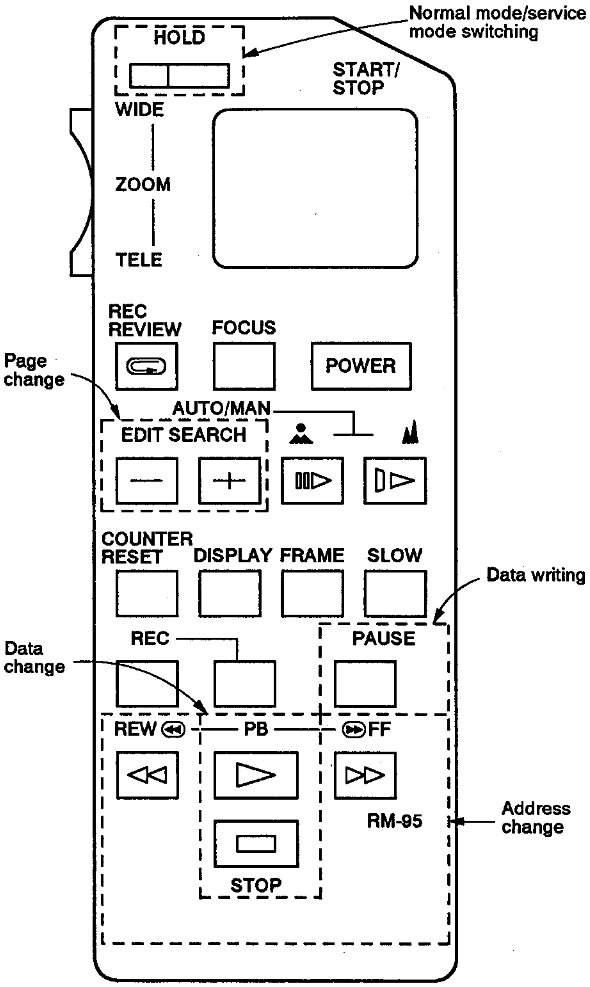
(1) Service LANC memory map


Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

Page	Page Layout
0	
1	D page write protect setting/release
2	Mode controller RAM, I/O
3	Mechanism controller RAM, I/O
4	
5	
6	Shared by camera section
7	Camera controller RAM, I/O
8	
9	
A	2 bytes data display
B	
C	
D	VTR EEPROM (Note 1)
E	
F	Camera EEPROM (Note 2)


LCD Display of the Adjusting Remote Controller
0:00:00
Page
Data
Address

Adjusting remote commander RM-95 (J-6082-053-A)


Normal mode/service mode switching
HOLD
START/STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page change
AUTO/MAN
EDIT SEARCH
—
+
COUNTER RESET
DISPLAY
FRAME
SLOW
Data writing
Data change
REC
PAUSE
REW
PB
FF
RM-95
Address change
STOP

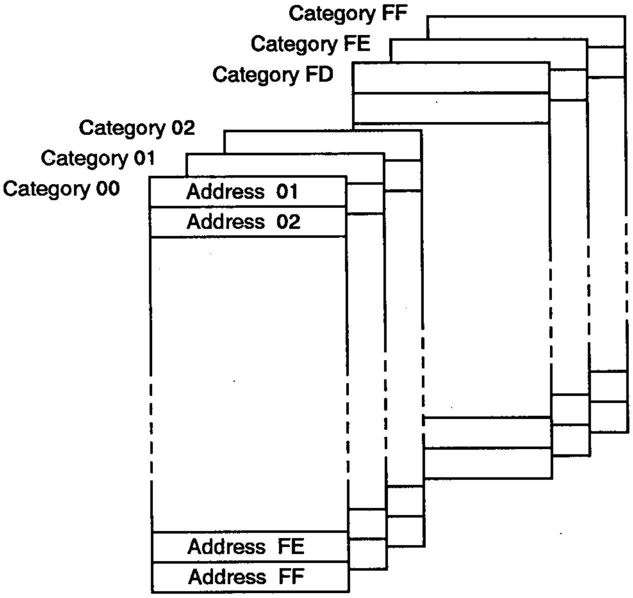
Note 1: The data of this page is written in the EEPROM (IC901 of VC-134 board).

Note 2: The data of this page is written in the EEPROM (IC651 of VC-134 board).

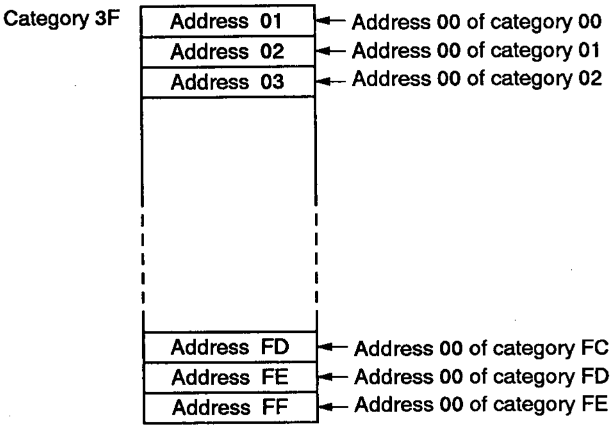
(2) Category codes

This unit uses category codes for pages 2 and 3. The 256 addresses from 00 to FF are insufficient for the mode controller and mechanism controller to access the RAM. Therefore, new category codes have been used to seemingly increase addresses (Addresses 0000 to FFFF).

However, the data of address 00 are actually used as page numbers to form the 256 pages from 00 to FF, as shown in the following figure. This address 00 data are called category codes to discriminate them from the real page numbers. The new pages are called categories.


Category FF
Category FE
Category FD
Category 02
Category 01
Category 00
Address 01
Address 02
Address FE
Address FF

(Supplement) As each category no longer has address 00 as it is, this address cannot be accessed using the adjusting remote commander. Therefore, category 3F is used for accessing address 00.


Category 3F
Address 01
Address 02
Address 03
Address FD
Address FE
Address FF
Address 00 of category 00
Address 00 of category 01
Address 00 of category 02
Address 00 of category FC
Address 00 of category FD
Address 00 of category FE

(Example)

Specification of	Page 2	Category 01	Address 15

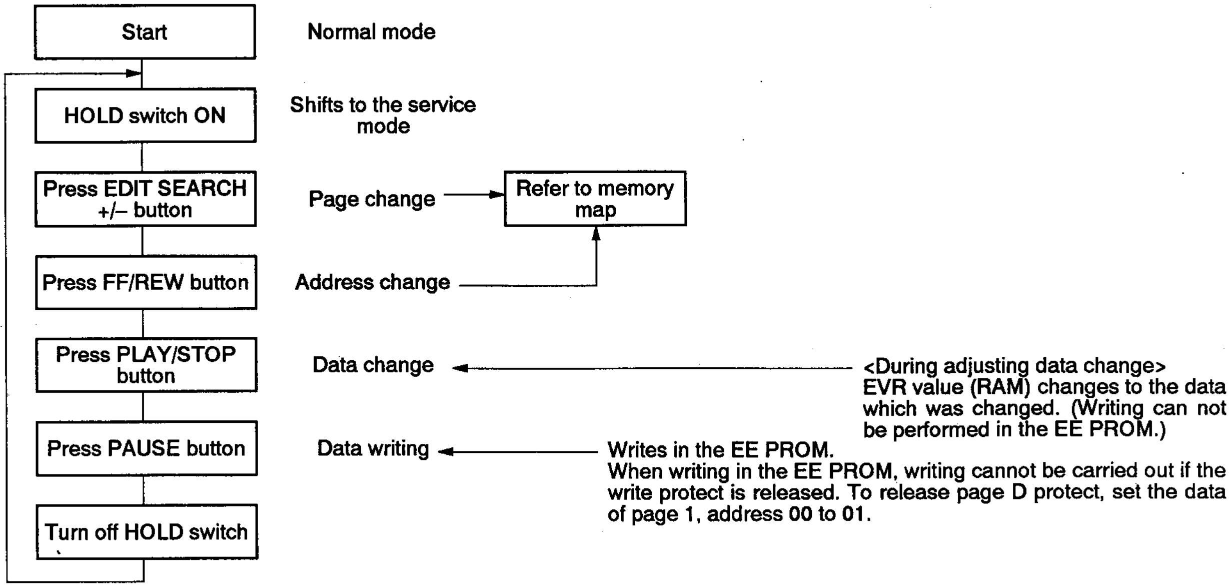
Page 2 is the mode controller

Page 3 is the mechanism controller

The actual category and address are specified by the adjusting remote commander as follows.

Order	Page	Address	Data	Procedure
1	2	00	01	Select category 01 using the data of page 2, address 00. From here onwards, category 01 will be selected at page 2 until the data of page 2, address 01 is rewritten.
2	2	15		As the data of page 2, address 00 is 01, select page 2, address 15 to select page 2, category 01, address 15. (The data of this address is the battery voltage A/D conversion value of the mode controller input.)

[Shifting to the service mode using the adjusting remote commander]


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press EDIT SEARCH +/– button
Page change
Refer to memory map
Press FF/REW button
Address change
Press PLAY/STOP button
Data change
Press PAUSE button
Data writing
Turn off HOLD switch

<During adjusting data change>
EVR value (RAM) changes to the data which was changed. (Writing can not be performed in the EE PROM.)

Writes in the EE PROM.
When writing in the EE PROM, writing cannot be carried out if the write protect is released. To release page D protect, set the data of page 1, address 00 to 01.

Command Name	Command Function	Normal LANC Command
Page Up	Page+1	Edit Search+
Page Down	Page–1	Edit Search –
Direct Page Set	Sets to the specified page	Event Clear
Address Up	Address+1	Fast Forward
Address Down	Address–1	Rewind
Data Up	Data+1	Play Back
Data Down	Data–1	Stop
Store	Writes data in the EEPROM, RAM	Pause

(3) Additional notes on adjustment

After the completion of the all adjustments, cancel the adjustment mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date, time and menu settings have been set by users are canceled. Perform resetting.)
2) Return data of the address: 00 on page: 1 to 00. And when data on page: 2 is changed, return the data to the original condition.

2. Page D write protect

Release/set the page D write protect.

Page 1	Address 00

Data	Function
00	Normal (Write protect condition)
01	Release the write protect

3. Test mode setting

Set/release each test mode. Release the protect (Page: 1, Address: 00, Data: 01) before setting the data.

Page D	Address 01

Data	Function
00	Normal
01	Test mode 1 Various emergency prohibitions and releases Drum, capstan, loading motor, reel, tape top and end, DEW SP/LP automatic discrimination prohibition, manual switching, 5 minutes pause release prohibition Power off prohibition/release by battery end
02	Test mode 2 Not used
03	Test mode 3 Track shift Performs the track shift playback Rear lock distinction prohibition during PB SP/LP automatic discrimination prohibition, manual switching
04	Test mode 4 Rear lock mode Performs rear lock playback SP/LP automatic discrimination prohibition, manual switching
05	Test mode 5 SP/LP automatic discrimination prohibition, manual switching

※ For page D, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (7.2 Vdc).

※ Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander.

4. Emergency Memory Address

Page D	Address E4 to EF

Address	Contents
E4	Last EMG code
E6	Upper: MSW code when the last emergency occurs Lower: MSW code when the mechanism starts shifting the last time
E7	Lower: MSW code of the last movement
E8	2nd EMG code
EA	Upper: MSW code when the 2nd emergency occurs Lower: MSW code when the mechanism starts shifting the 2nd time
EB	Lower: MSW code of the 2nd movement
EC	1st EMG code
EE	Upper: MSW code when the 1st emergency occurs Lower: MSW code when the mechanism starts shifting the 1st time
EF	Lower: MSW code of the 1st movement

When there are no emergency, data 00 will be written in the above addresses (E4 to EF). When the first emergency occurs, the data corresponding to the emergency will be written in the address (E4 to E7) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (E8 to EB) for this second emergency.

The data corresponding to the emergency occurring the last will be written in the address (EC to EE) for this last emergency.

Therefore the data of addresses EC to EE are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses E4 to EF to 00 after repairs/adjustments.

Note 2: When rewriting the data, be sure to press the PAUSE buttton of the remote commander after setting the data.

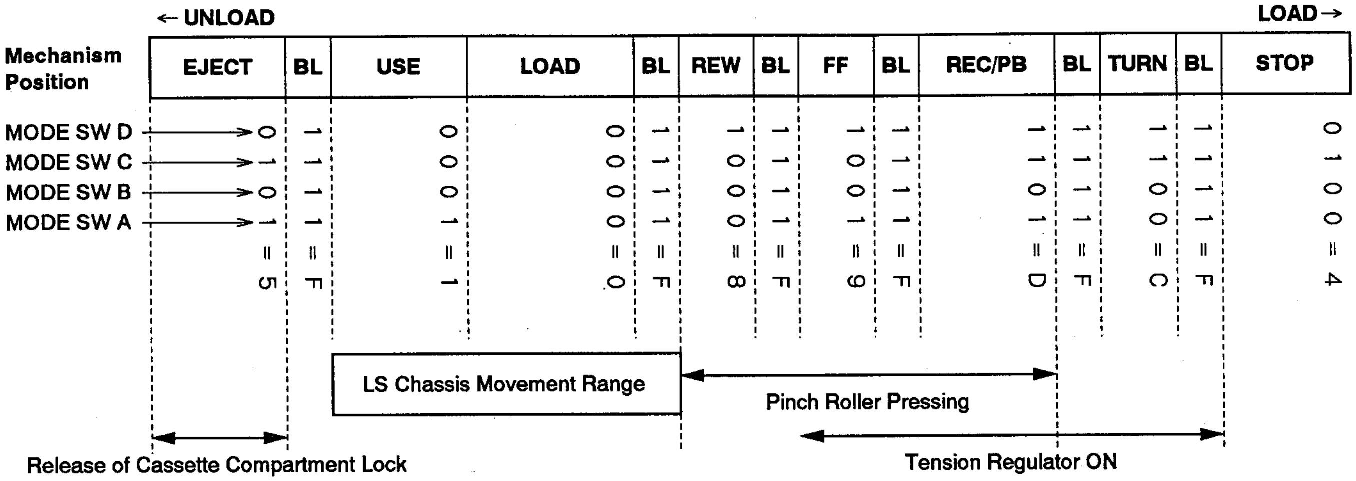
4-1. EMG CODE (Emergency Code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses E4, E8, and EC.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

4-2. MSW Codes

- The upper parts of the data of addresses E6, EA, and EE represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The lower parts of the data of addresses E6, EA, EE represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses E7, EB, EF represent the MSW codes of the desired movement when the mechanism position is to be moved.

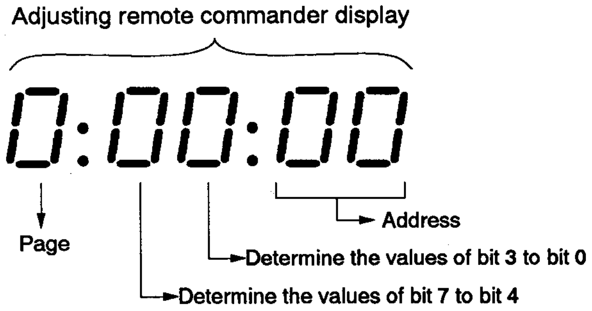

← UNLOAD
LOAD→
LS Chassis Movement Range
Pinch Roller Pressing
Release of Cassette Compartment Lock
Tension Regulator ON

Mechanism Position	EJECT	BL	USE	LOAD	BL	REW	BL	FF	BL	REC/PB	BL	TURN	BL	STOP
MODE SW D	0	1	0	0	1	1	1	1	1	1	1	1	1	0
MODE SW C	1	1	0	0	1	0	1	0	1	1	1	1	1	1
MODE SW B	0	1	0	0	1	0	1	0	1	0	1	0	1	0
MODE SW A	1	1	1	0	1	0	1	1	1	1	1	0	1	0
	= 5	= F	= 1	= 0	= F	= 8	= F	= 9	= F	= D	= F	= C	= F	= 4

Mechanism Position	MSW Code	Contents
EJECT	5	Position at which the cassette compartment lock is released. Position which is mechanically nearest the unskate end side. The mechanism will not move any further in the UNLOAD direction.
BL	F	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	1	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position. The TG1 and TG9 guides will start to come out as the mechanism moves into the LOAD position. This code is wide.
LOAD	0	Code during loading. Code that is used while the LS chassis is moving. LS operations and guide loading are carried out.
REW	8	REW position. REW, FR_REV are carried at this position.
FF	9	FF position. Except during the FF mode and CUE from FF, this position is not used.
RP	D	PB, REC, CUE/REV, PAUSE positions. The pinch roller is pressed and tension regulator is on. The mechanism operates in this position in modes where normal images are displayed.
TURN	C	Position at which the pendulum gear is swung when the direction of tape running is changed while images such as PB-Review are being displayed. The pinch roller turns off with the tension regulator on.
STOP	4	Stop position in the loading state. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on. The mechanism will not move any further in the loading direction.
NULL	3	This code does not exist in the mechanism deck. It will be recorded in the error memory when errors occur while the loading motor is not driven.

5. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is “1” or “0”.


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

	Remote controller display	Bit value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A(A)	1	0	1	0
	B(b)	1	0	1	1
	C(c)	1	1	0	0
	D(d)	1	1	0	1
Ⓑ→	E(E)	1	1	1	0
	F(F)	1	1	1	1

(Example) If the remote commander display data is “8E”, bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

6. Mode controller input check

Page 2	Category 00	Address 1A

Bit	Input Signal	Input Signal Level
0		
1		
2		
3	SW BEEP (IC903 (85))	“1”=H, “0”=L
4	SW SIRCS (IC903 (86))	“1”=H, “0”=L
5		
6		
7	CHARGE REF (IC903 (89))	“1”=H, “0”=L

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	1A		The H/L of each input signal can be discriminated by differentiating the bit values of the display data.

7. LED check

Page 2	Category 00	Address AE

Data	
00	Normal
10	Tally LED lights up

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	AE	10	Tally LED light up.

8. Key input check

Page 2	Category 3F	Address 01

Bit	Key Switch	Condition of Switch
0	Date (+) (SW-230 S301)	"1"=OFF "0"=ON
1	Time (SW-230 S302)	
2	Eject (EZ-6 S550)	
3	Video power supply (CF-36, S371)	
4	Start Stop mode SW (EZ-6, S553)	
5	Start/Stop (CF-36, S370)	
6	CC DOWN (Mechanism section)	
7	Camera power supply (CF-36, S371)	

Using method:

Order	Page	Address	Data	Procedure
1	2	00	3F	Specification of category 3F
2	2	01		The on/off of each key switch can be discriminated by differentiating the bit values of the display data.

9. Key input check (A/D Port)

Page 2	Category 01	Address 16 to 18

Address \ Display Data	00 to 10	2F to 55	56 to 87	88 to C5	C6 to FF
16 (K AD IN 0: IC903 (82))	REC•REVIEW (SW-230 S203)		LCD ON/OFF (SW-230 S304)		No key input
17 (K AD IN 1: IC903 (83))	STOP (FK-60 S358)	REW (FK-60 S357)	PLAY (FK-60 S356)	FF (FK-60 S355)	No key input
18 (K AD IN 2: IC903 (84))	COUNTER RESET (FK-60 S354)	DATA SCREEN (FK-60 S353)	BRIGHT + (FK-60 S352)	BRIGHT − (FK-60 S351)	No key input

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 00
2	2	16 to 18		The key pressed can be discriminated by the display data of each address.

10. Wireless remote commander reception contents check

Page 2	Category 01	Address 11

Display Data	Pressed Key of Wireless Remote Commander
FF	Non
99	Start/Stop
1B	REW
1C	FF
18	Stop
1A	Playback
19	Pause
5A	Data screen
1D	Record
23	Slow

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	11		The pressed key of the wireless remote commander can be discriminated by the display data.

11. Battery voltage check

Page 2	Category 01	Address 15

Display Data	Battery Voltage
FF	Approx. 10 Vdc
F0	Approx. 9.4 Vdc
E0	Approx. 8.8 Vdc
D0	Approx. 8.2 Vdc
C0	Approx. 7.5 Vdc
B0	Approx. 6.9 Vdc
A0	Approx. 6.3 Vdc
90	Approx. 5.6 Vdc
80	Approx. 5.0 Vdc

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	15		The battery voltage can be discriminated by the display data.

※ Voltage measurement accuracy is approx. ± 10%.

12. Mechanism section switch, etc. check

Page 2	Category 00	Address 86

<table>
<tr><th>Bit</th><th>Switch, etc.</th><th>Condition</th></tr>
<tr><td>0</td><td>Hi8 MP</td><td>"1"=Hi8 MP tape, "0"=Others</td></tr>
<tr><td>1</td><td>PB E/L</td><td>"0"=Fix</td></tr>
<tr><td>2</td><td>ME/MP</td><td>"1"=ME tape, "0"=MP tape</td></tr>
<tr><td>3</td><td>REC PROOF</td><td>"1"=Recording prohibited, "0"=Recording possible</td></tr>
<tr><td>4</td><td>MODE SW A</td><td rowspan="4">
<table>
<tr><th>Display Data</th><th>Mode Switch Position</th></tr>
<tr><td>5*</td><td>EJECT</td></tr>
<tr><td>1*</td><td>USE</td></tr>
<tr><td>0*</td><td>LOAD</td></tr>
<tr><td>8*</td><td>REW</td></tr>
<tr><td>9*</td><td>FF</td></tr>
<tr><td>D*</td><td>RP (REC, PB, CUE, REVIEW, PAUSE)</td></tr>
<tr><td>C*</td><td>TURN</td></tr>
<tr><td>4*</td><td>STOP</td></tr>
</table>
*: 0 to F
</td></tr>
<tr><td>5</td><td>MODE SW B</td></tr>
<tr><td>6</td><td>MODE SW C</td></tr>
<tr><td>7</td><td>MODE SW D</td></tr>
</table>

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	86		The mode switch position can be discriminated by the upper 1 digit of the display data. The conditions of various switches can be discriminated by the bit value of the lower 1 digit.

13. Mechanism controller input/output check

Page 2	Category 00	Address 85

Bit	I/O Signal	Condition
0	PB LP/SP DET	"1"=LP playback, "0"=Others
1	SYNC DET	"1"=VTR SYNC present, "0"=No VTR SYNC
2	REC CLOG	"1"=Clog occurred, "0"=Others
3		
4	JOG	"1"=Variable speed playback, "0"=Others
5	VA PB MODE	"1"=PB mode, "0"=E-E mode
6	AUDIO MUTE	"1"=Mute, "0"=Audio output
7	VIDEO MUTE	"1"=Mute, "0"=Video output

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	85		The condition of each input/output signal can be discriminated by differentiating the bit value of the display data.

14. Mechanism controller input check

Page 2	Category 00	Address 89

Bit	I/O Signal	Condition
0		
1	$\overline{\text{DEW DET}}$	"0"=Condensation occurred, "1"=Others
2		
3		
4		
5		
6		
7		

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	89		The condition of each input signal can be discriminated by differentiating the bit values of the display data.

15. Mechanism controller A/D port input voltage check

Page 3	Category 02	Address 14

Display Data	A/D Port Input Voltage
00 to FF	Approx. 0 Vdc to approx. 5 Vdc

Using method:

<table>
<tr><th>Order</th><th>Page</th><th>Address</th><th>Data</th><th>Procedure</th></tr>
<tr><td>1</td><td>3</td><td>00</td><td>02</td><td>Specification of category 02</td></tr>
<tr><td>2</td><td>3</td><td>0E</td><td>02</td><td>Permission for A/D conversion operations</td></tr>
<tr><td>3</td><td>3</td><td>13</td><td></td><td>Set the data according to the following table, and specify the A/D port of the mechanism controller.
<table>
<tr><th>Data</th><th>Mechanism Controller Port</th></tr>
<tr><td>00</td><td>(60) pin; AN0, T REEL FG</td></tr>
<tr><td>01</td><td>(59) pin; AN1, S REEL FG</td></tr>
<tr><td>02</td><td>(58) pin; AN2, ATF ERROR</td></tr>
<tr><td>03</td><td>Not used</td></tr>
<tr><td>04</td><td>(56) pin; AN4, $\overline{\text{DEW DET}}$</td></tr>
</table></td></tr>
<tr><td>4</td><td>3</td><td>14</td><td></td><td>The A/D port input voltage can be discriminated according to the display data.</td></tr>
</table>

16. Tape top/end sensor check

Page 3	Category 02	Address 0A

Display Data	Tape Top/End Sensor Condition
00	Tape present (Middle of tape)
01	Tape top
10	Tape end
11	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non active (Not receiving light)
"1"=Active (Receiving light)

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0E	10	Request for tape top/end sampling operations
3	3	0A		The condition of the tape top/end sensor can be discriminated by the display data.

17. Individual operations of the drum, capstan, and loading motor

Page 3	Category 02	Address 11

Display	Operations
00	Normal
02	Drum in normal rotation
04	Drum in reverse rotation
06	Capstan in normal rotation
08	Capstan in reverse rotation
0A	Loading motor in normal rotation
0C	Loading motor in reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0E	01	Permission for individual operations of motor
3	3	11		The motor can be operated individually by setting the data indicated above.
4				Turn off the main power supply (7.2 Vdc).

18. Page D address list

Note 1: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

Note 2: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

*1. No mark: US, Canadian model
< >: E model

Address	Name	Function ( ) contains the adjustment voltage output terminal	Adjustment data	
			Initial valu	Memo column
00		Not used	00	00
01	Test mode	Test mode	00	00
02	Destination flag	Destination flag	4A*1 < 6A >	4A*1 < 6A >
03	Battery end	Battery end adjustment	8D	
04	SW POSITION (LOW)	SW POSITION adjustment [Low]	00	
05	SW POSITION (HIGH)	SW POSITION adjustment [High]	80	
06	EMERGENCY code (FIRST)	Not used		
07	EMERGENCY code (LAST)			
08	EMERGENCY mode (FIRST)			
09	EMERGENCY mode (LAST)			
0A	SR DATA (MP NORMAL SP)	CXA1207 serial data	28	28
0B	SR DATA (MP NORMAL LP)	CXA1207 serial data	1C	1C
0C	SR DATA (ME HI8 SP)	CXA1207 serial data	25	25
0D	SR DATA (ME HI8 LP)	CXA1207 serial data	2F	2F
0E	SR DATA (ME NORMAL SP)	CXA1207 serial data	18	18
0F	SR DATA (ME NORMAL LP)	CXA1207 serial data	1C	1C
10	SR DATA (MP HI8 SP)	CXA1207 serial data	25	25
11	SR DATA (MP HI8 LP)	CXA1207 serial data	2F	2F
12	SR DATA (EDIT ON NORMAL)	CXA1207 serial data	1C	1C
13	SR DATA (EDIT ON HI8)	CXA1207 serial data	25	25
14		Not used		
15		Not used		
16		Not used		
17		Not used		
18		Not used		
19		Not used		
1A		Not used		
1B		Not used		
1C		Not used		
1D		Not used		
1E		Not used		
1F		Not used		
20	Variation	DDS display start year, EJECT permission, etc.	10	10
21	Adjust mode	CAM P ON, VTR P ON, etc.	00	00
22	Slow Brake width (SP)		40	40
23	Slow Brake width (LP)		23	23
24 to 26		Not used		
27		LCD OFF mode end correction	00	00

Table 10-3 (1).

Address	Name	Function ( ) contains the adjustment voltage output terminal	Adjustment data	
			Initial valu	Memo column
28		Minimum hold release hysteresis	0C	0C
29		External battery pre-end threshold	90	90
2A		VTR mode end correction	07	07
2B		Compensation for external battery end	00	00
2C		Hunching prevention threshold	95	95
2D	BATT REF LOW	Threshold voltage [LOW] Battery remained amount display	A3	A3
2E	BATT REF MIDDLE	Threshold voltage [MID]	B0	B0
2F	BATT REF FULL	Threshold voltage [FULL]	B6	B6
30	REC C 1A (ME)	ME 1Ach REC C level adjustment (㊲ of IC150)		
31	REC C 1A (MP)	MP 1Ach REC C level adjustment (㊲ of IC150)		
32	REC C 1B (ME)	ME 1Bch REC C level adjustment (㊲ of IC150)		
33	REC C 1B (MP)	MP 1Bch REC C level adjustment (㊲ of IC150)		
34	REC C 2A (ME)	ME 2Ach REC C level adjustment (㊲ of IC150)		
35	REC C 2A (MP)	MP 2Ach REC C level adjustment (㊲ of IC150)		
36	REC C 2B (ME)	ME 2Bch REC C level adjustment (㊲ of IC150)		
37	REC C 2B (MP)	MP 2Bch REC C level adjustment (㊲ of IC150)		
38	CAP FG OFFSET	Capstan FG bias adjustment (⑰ of IC150)	80	
39		Not used		
3A		Not used		
3B		Not used		
3C		Not used		
3D		Not used		
3E	MT 2A (E)	Not used		
3F	MT 2A (L)	2Ach frequency characteristics adjustment (⑳ of IC150)	FF	
40	MT 2B (E)	Not used		
41	MT 2B (L)	2Bch frequency characteristics adjustment (㉑ of IC150)	FF	
42	MT 1A (E)	Not used		
43	MT 1A (L)	1Ach frequency characteristics adjustment (⑱ of IC150)	FF	
44	MT 1B (E)	Not used		
45	MT 1B (L)	1Bch frequency characteristics adjustment (⑲ of IC150)	FF	
46		Not used		
47		Not used		
48	RF CONT (ME)	ME RF CONT (⑪ of IC150)	78	78
49	RF CONT (MP)	MP RF CONT (⑪ of IC150)	78	78
4A	SYNC AGC	SYNC AGC adjustment (㊳ of IC150)	70	
4B		Not used		
4C	COMB ADJ	Chroma comb type filter adjustment (㊴ of IC150)		
4D	SR IR	IR adjustment (㊷ of IC150)		
4E	CAR.-E	Not used		
4F	CAR.-L	Y-FM carrier frequency adjustment (㊸ of IC150)		
50	DEV.-E	Not used		
51	DEV.-L	Y-FM deviation adjustment (㊹ of IC150)		

Table 10-3 (2).

Address	Name	Function ( ) contains the adjustment voltage output terminal	Adjustment data	
			Initial valu	Memo column
52	REC Y (ME E)	Not used		
53	REC Y (MP E)	Not used		
54	REC Y (ME L)	ME REC Y level adjustment (⑯ of IC150)		
55	REC Y (MP L)	MP REC Y level adjustment (⑯ of IC150)		
56	REC Y	Not used		
57	PB Y (EE)	EE mode REC Y level (㊼ of IC150)	80	80
58	PB Y (E)	Not used		
59	PB Y (L)	PB Y De-emphasis adjustment (㊼ of IC150)		
5A	EMPH (EE)	EE emphasis input level adjustment (㊽ of IC150)		
5B	EMPH (PB)	PB LINE OUT level adjustment (㊽ of IC150)		
5C		Not used		
5D		Not used		
5E		Not used		
5F		Not used		
60		Not used		
61		Not used		
62		Not used		
63		Not used		
64		Not used		
65		Not used		
66		Not used		
67	PAL JOG	Not used		
68 to 79		Not used		
7A	1.5 IR	1.5 MHz IR adjustment (㉖ of IC150)		
7B	1.5 DEV	1.5 MHz deviation adjustment (㉗ of IC150)		
7C		Not used		
7D		Not used		
7E to 83		Not used		
84	ME CONT (ME E)	Not used		
85	ME CONT (MP E)	Not used		
86	ME CONT (ME L)	Normal ME REC C level (㉓ of IC150)	AB	AB
87	ME CONT (MP L)	Normal MP REC C level (㉓ of IC150)	3C	3C
88 to 8D		Not used		
8E	SUB BRIGHT B	White balance adjustment (㉔ of IC150)	80	
8F	H POSITION	Horizontal display position adjustment (㉒ of IC150)	80	
90	BURST CLEARING	Not used	80	80
91	CONTRAST	Contrast adjustment (⑭ of IC150)	80	
92	SUB BRIGHT R	White balance adjustment (⑬ of IC150)	80	
93	V COM CONT	V COM adjustment (⑩ of IC150)	80	
94	VCO CNT	VCO adjustment (⑨ of IC150)	80	
95	BRIGHT (CENTER VALUE)	Bright adjustment (㊵ of IC150)	80	
96 to D4		Not used		

Table 10-3 (3).

Address	Name	Function ( ) contains the adjustment voltage output terminal	Adjustment data	
			Initial valu	Memo column
D4	NEXT DEF BIT	CCD imager correction pattern (for backup)		
D5	CCD DEFECT 0	CCD imager correction data (for backup) ※ Refer to "CCD Imager Correction Data Writing" of Camera Section Adjustments.		
D6	CCD DEFECT 1			
D7	CCD DEFECT 2			
D8	CCD DEFECT 3			
D9	CCD DEFECT 4			
DA	CCD DEFECT 5			
DB	CCD DEFECT 6			
DC	CCD DEFECT 7			
DD	CCD DEFECT 8			
DE	CCD DEFECT 9			
DF	CCD DEFECT 10			
E0	CCD DEFECT 11			
E1	CCD DEFECT 12			
E2	CCD DEFECT 13			
E3	CCD DEFECT 14			
E4		Last EMG code		
E5				
E6		MSW code when the last emergency occurs (upper) and when the mechanism starts shifting (lower)		
E7		MSW code of the movement target when the last emergency occurs (lower)		
E8		2nd ENG code		
E9				
EA		MSW code when the 2nd emergency occurs (upper) and when the mechanism starts shifting (lower)		
EB		MSW code of the movement target when the 2nd emergency occurs (lower)		
EC		1st ENG code		
ED				
EE		MSW code when the 1st emergency occurs (upper) and when the mechanism starts shifting (lower)		
EF		MSW code of the movement target when the 1st emergency occurs (lower)		
F0 to FF		(lower)		

Table 10-3 (4).

10-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Check (DD-57 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q950 collector
Measuring Instrument	Frequency counter
Specified Value	460 ± 20 kHz

Adjusting method:

1) Check that the oscillator frequency satisfies the specified value.

2. Power Voltage Check (DD-57 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
LCD 4.9V check	
Measurement Point	Pin ⑦ of CN951
Specified Value	4.9 ± 0.1 Vdc
D4.9V check	
Measurement Point	Pins ㉘ and ㉚ of CN951
Specified Value	4.9 ± 0.1 Vdc
D4V check	
Measurement Point	Pin ㉓ of CN951
Specified Value	3.8+0.1 Vdc
VIDEO 4.75V check	
Measurement Point	Pins ① and ③ of CN951
Specified Value	4.7 ± 0.1 Vdc
RP 4.9V check	
Measurement Point	Pin ② of CN951
Specified Value	4.9 ± 0.1 Vdc
AUDIO 4.75V check	
Measurement Point	Pin ⑤ of CN951
Specified Value	4.73 ± 0.1 Vdc
CAM 4.9V check	
Measurement Point	Pin ㉙ of CN951
Specified Value	4.85 ± 0.1 Vdc
CAM15V check	
Measurement Point	Pin ㉕ of CN951
Specified Value	15 ± 0.3 Vdc
CAM –8V check	
Measurement Point	Pin ㉗ of CN951
Specified Value	–8.0 ± 0.4 Vdc
MOTOR 4.9V check	
Measurement Point	Pins ⑥ and ⑧ of CN951
Specified Value	4.9 ± 0.1 Vdc
SS 4.75V check	
Measurement Point	Pin ④ of CN951
Specified Value	4.73 ± 0.1 Vdc

10-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "10-1-9. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 95

Input method:

1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address.
   (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	Camera recording
Subject	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT END)

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 10-4.
2) Connect Pin ⑭ of CN552 on EZ-6 board to GND with a jumper wire.

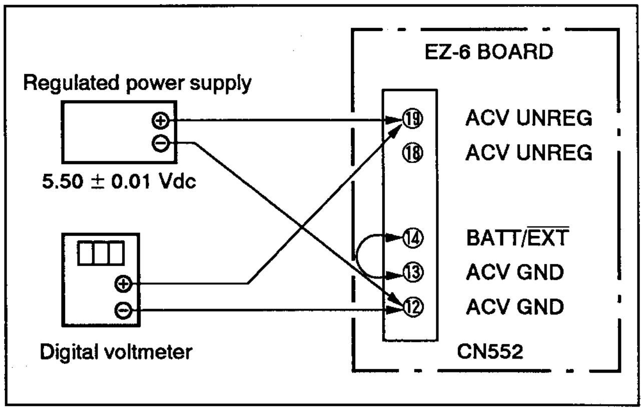


Fig. 10-4.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 5.8 ± 0.1 Vdc.
2) Set up the camera recording mode.
3) Release the protect.
   Page: 1, address: 00, data: 01
4) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
5) Set data: 01 to page: 2, address: 00.
   (Specification of category 01)
6) Select page: 2, address: 15, read the adjusting remote control unit display data, and set to DEND.
7) Set data DEND to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.

10-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VC-134 board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP)
Measurement Point	CH1: Pin ⑨ of CN001 (RF SWP) CH2: Pin ⑫ of CN001 (PB RF CH2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) 05 (SW POSITION)
Specified Value	t1=0 ± 10 μsec

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 80 to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t1". (Coarse adjustment)
4) Press the PAUSE button of the remote control unit.
5) Change the data of page: D, address: 04, and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
6) Press the PAUSE button of the adjusting remote control unit.

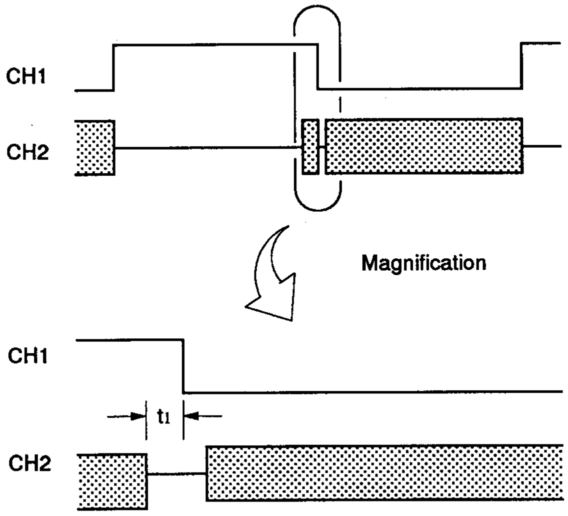


Fig. 10-5.

2. CAP FG Duty Adjustment (VC-134 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ④ of CN001 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	38 (CAP FG BIAS)
Specified Value	Duty=50 ± 1.5%

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 80 to page: D, address: 38.
3) Change the data of page: D, address: 38, and adjust the duty of the CFG waveform to the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

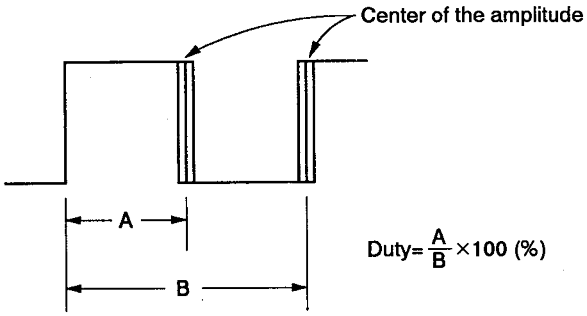


Fig. 10-6.

10-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Fig. 10-3.

[Adjusting procedure]

1) Playback frequency characteristic adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) SYNC AGC adjustment
5) IR adjustment
6) Y/C separation adjustment
7) Emphasis input level adjustment
8) PB De-emphasis adjustment
9) PB LINE OUT level adjustment
10) Y FM carrier frequency adjustment
11) Y FM deviation adjustment
12) Chroma emphasis fo adjustment
13) REC Y level adjustment
14) MP REC C RF preset adjustment
15) ME REC C RF preset adjustment
16) REC ATF level check
17) Chroma Flicker check and REC C RF adjustment
18) REC AFM level check

1. Playback Frequency Characteristic Adjustment (VC-134 board)

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-6N)
Measurement Point	Refer to Fig. 10-7.
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	43 (1a-ch M.T), 45 (1b-ch M.T), 3F (2a-ch M.T), 41 (2b-ch M.T)
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of each address of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of each PB RF output waveform of 1a, 1b, 2a, 2b to the specified value.
   Note: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.

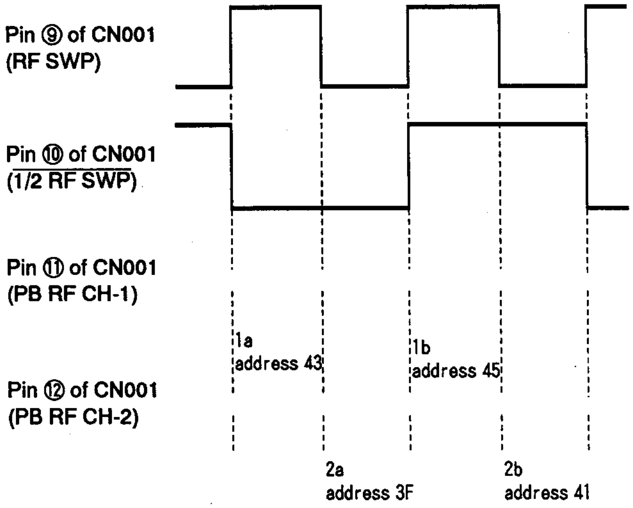


Fig. 10-7.

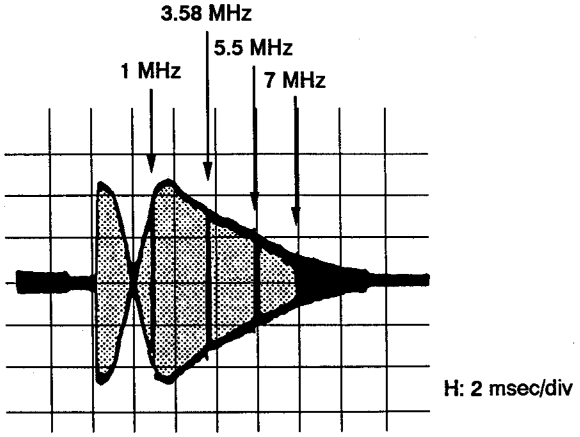


Fig. 10-8.

2. Flying Erase Check (VC-134 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ⑮ of CN002 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: Above 7.0 MHz Voltage: Above 7.0 Vp-p

Note: Use a MP type tape.

Checking method:

1) Check that the oscillation frequency is above 7.0 MHz and that the oscillation voltage is above 7.0 Vp-p.

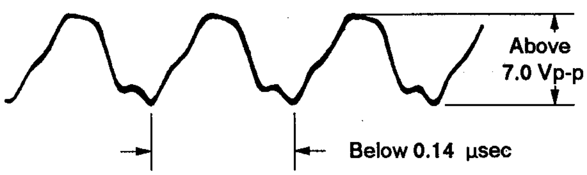


Fig. 10-9.

3. VXO Oscillation Frequency Check (VC-134 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑫ of IC305
Measuring Instrument	Frequency counter
Specified Value	3579545 ± 70 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC305 is 3579545 ± 70 Hz.

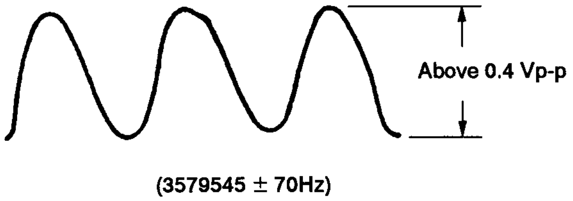
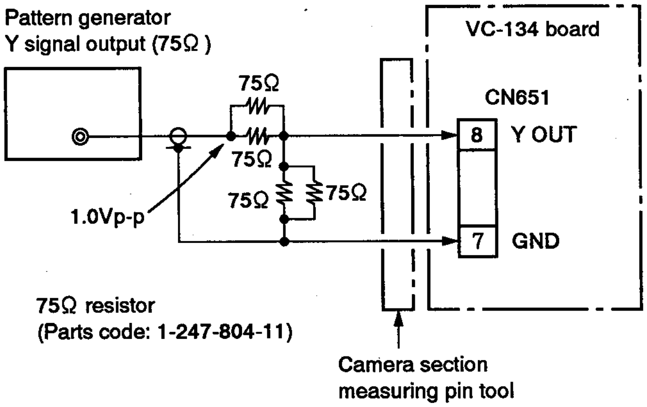


Fig. 10-10.

4. SYNC AGC Adjustment (JK-109 board)

Mode	Camera recording
Signal	Y signal of color bar (Note 1)
Measurement Point	Pin ⑧ of W300 (VJ I/O) Note 2
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (SYNC AGC)
Specified Value	A=1.00 ± 0.01V

Note 1: Input the Y signal using the camera section measuring pin tool (J-6082-192-A and J-6082-275-A) as shown in the following figure.



Note 2: Terminate the video terminal of the AV jack at 75Ω . After completing adjustments, remove the terminated resistors.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

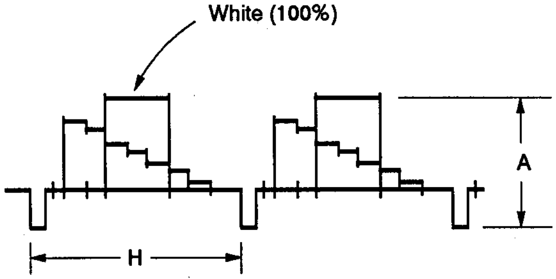


Fig. 10-11.

5. IR Adjustment (VC-134 board)

Mode	Record
Signal	Color bar (AV jack)
Measurement Point	Pin ⑦ of IC301 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 50 mVp-p)

Note: For details of inputting signals to the AV jack, refer to "10-1-2. Connecting the Equipments" and "10-1-4. How to Set the REC Mode".

Connection
1) Connect pin ② of IC303 (V REF 3.5 Vdc) to pin (51) of IC301 with a jumper wire.

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
3) Press the PAUSE button of the adjusting remote control unit.

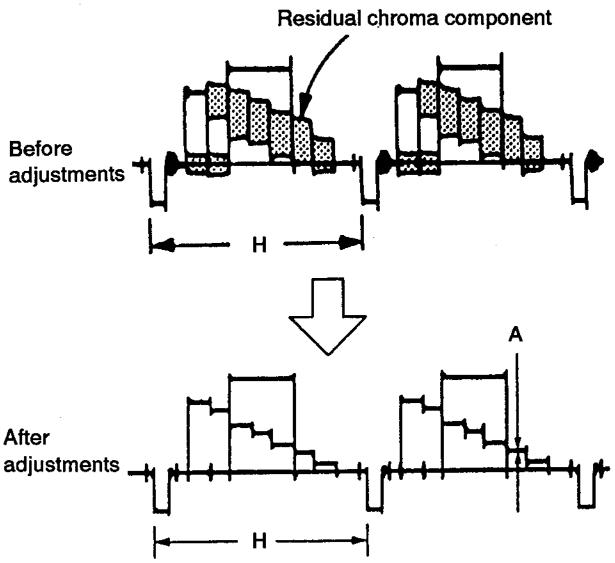


Fig. 10-12.

6. Y/C Separation Adjustment (VC-134 board)

Mode	Record
Signal	Color bar (AV jack)
Measurement Point	Pin ⑪ of IC301 (C+CD)
Adjusting Element	Oscilloscope
Measuring Instrument	RV300 (Y/C SEP)
Adjustment Page	D
Adjustment Address	4C (COMB ADJ)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
3) Adjust RV300 so that the residual chroma component (A) becomes minimum.
5) Press the PAUSE button of the adjusting remote control unit.

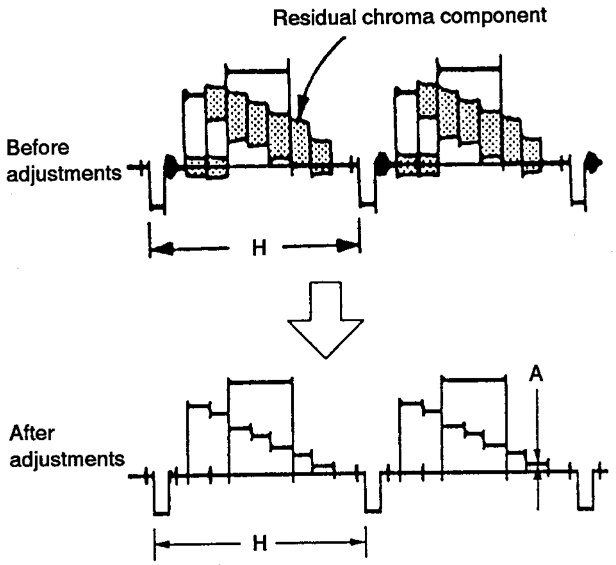


Fig. 10-13.

7. Emphasis Input Level Adjustment (VC-134 board)

Mode	Record
Signal	Color bar (AV jack)
Measurement Point	Pin ⑤ of IC302 (or Pin ③ of IC301)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMPH (EE))
Specified Value	A=0.50 ± 0.005V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

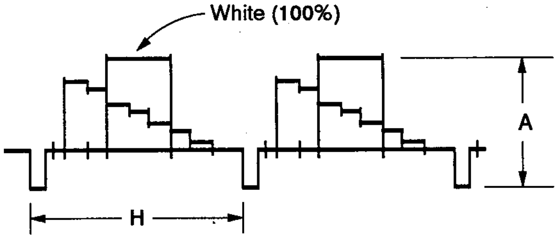


Fig. 10-14.

8. PB De-emphasis Adjustment (VC-134 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Color bar section
Measurement Point	Pin ㉑ of IC301 or pin ① of IC300
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	59 (PB Y)
Specified Value	A=0.50 ± 0.005V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

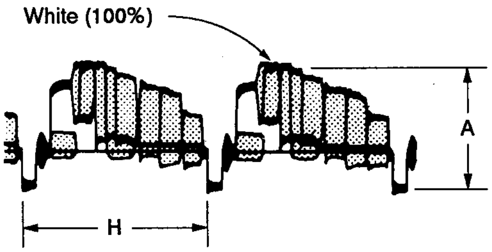


Fig. 10-15.

9. PB LINE OUT Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Color bar section
Measurement Point	Pin ⑧ of W300 (VJ I/O) Note 1
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (EMPH (PB))
Specified Value	A=1.0 ± 0.01V

Note 1: Terminate the video terminal of the AV jack at 75Ω . After completing adjustments, remove the terminated resistors.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

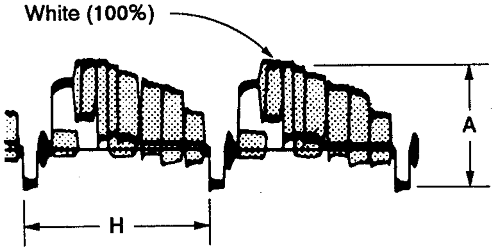


Fig. 10-16

10. Y FM Carrier Frequency Adjustment (VC-134 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㊸ of IC301 (Y RF OUT) or Base of Q012
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (CAR-L)
Specified Value	4.37 ± 0.01 MHz

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Perform "Deviation Adjustment".

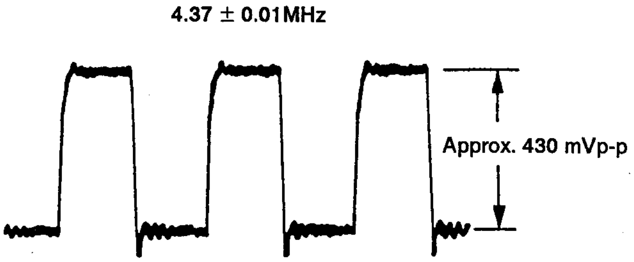


Fig. 10-17.

11. Y FM Deviation Adjustment (VC-134 board)

Mode	Record and playback
Signal	Color bar (AV jack)
Measurement Point	Pin ㉑ of IC301 or Pin ① of IC300
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (DEV-L)
Specified Value	A=0.50 ± 0.005V

Note: Check that "Emphasis Input Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
5) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

6) Press the PAUSE button of the adjusting remote control unit.

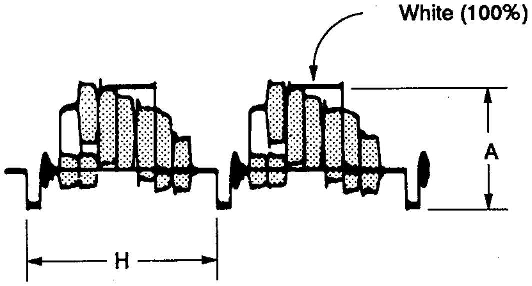


Fig. 10-18.

12. Chroma Emphasis fo Adjustment (VC-134 board)

Mode	Record
Signal	Color bar (AV jack)
Measurement Point	Pin ㉔ of IC305
Measuring Instrument	Oscilloscope
Adjustment Element	FL305
Specified Value	Minimum fo component

Connection:
1) Connect pin ㉔ of IC305 to GND with a 4.7 kΩ resistor (1-249-425-11).

Adjusting method
1) Adjust FL305 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

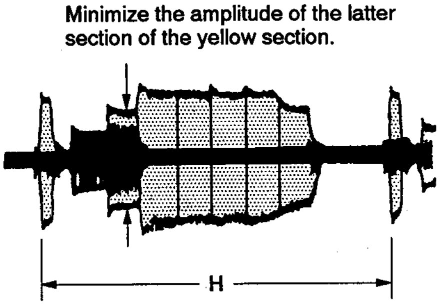

Minimize the amplitude of the latter section of the yellow section.
H

Fig. 10-19.

13. REC Y Level Adjustment (VC-134 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑤ of IC001
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	55 (REC Y (MP L)), 54 (REC Y (ME L))
Specified Value	A=320 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
- MP tape adjustment
2) Insert the MP tape, and set the record mode.
3) Change the data of page: D, address: 55, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.
- ME tape adjustment
5) Insert the ME tape, and set the record mode.
6) Change the data of page: D, address: 54, and adjust so that the Y signal level (A) becames the specified value.
7) Press the PAUSE button of the adjusting remote control unit.

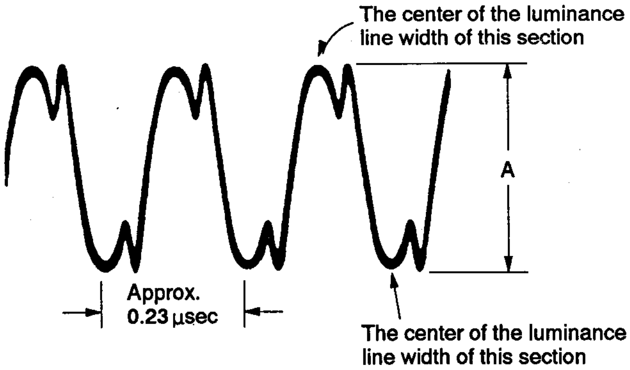

The center of the luminance line width of this section
A
Approx. 0.23 μsec
The center of the luminance line width of this section

Fig. 10-20.

14. MP REC C RF Preset Adjustment (VC-134 board)

Mode	Record
Signal	Color bar (AV jack)
Measurement Point	CH1 (1:1 probe) CH1a: Pin ⑦ of CN001 CH2a: Pin ⑧ of CN001 CH1b: Pin ⑤ of CN001 CH2b: Pin ⑥ of CN001 CH2 (10: 1 probe) Video output terminal
Measuring Instrument	Oscilloscope TRIGGER SOURCE: CH2
Adjustment Page	D
Adjustment Address	31 (REC C 1A (MP)), 33 (REC C 1B (MP)), 35 (REC C 2A (MP)), 37 (REC C 2B (MP))
Specified Value	A=33 ± 2 mVp-p

Note: Use a MP type tape.

Connection:

1) Connect Pin ㊻ of IC002 to GND with a 0.01 μF capacitor (1-101-004-00).
2) Connect Pin ④ of IC002 to GND with a 0.01 μF capacitor (1-101-004-00).

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing the data of page: D, address: 55, set data: 00. (Minimizing the REC Y RF level)
3) Connect CH1 probe of the oscilloscope to pin ⑦ of CN002 (REC 1a).
4) Change the data of page: D, address: 31, and adjust so that the CH1a REC C level (A) becomes the specified value.
   Note: By decreasing the REC C RF level of other channels (that is by decreasing the data of addresses 33, 35, and 37 in the adjustment of channel 1A), the signal level of the desired channel can be read more easily.
5) Press the PAUSE button of the adjusting remote control unit.
6) Adjust each REC C LEVEL of CH2a (address: 35), CH1b (address: 33) and CH2b (address: 37) in the same way.
7) Set the data memorized at step 2) to page: D, address: 55, and press the PAUSE button of the adjusting remote control unit.

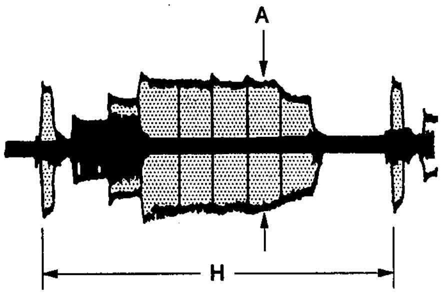


Fig. 10-21.

15. ME REC C RF Preset Adjustment (VC-134 board)

Mode	Record
Signal	Color bar (AV jack)
Measurement Point	CH1 (1:1 probe) CH1a: Pin ⑦ of CN001 CH2a: Pin ⑧ of CN001 CH1b: Pin ⑤ of CN001 CH2b: Pin ⑥ of CN001 CH2 (10: 1 probe) Video output terminal
Measuring Instrument	Oscilloscope TRIGGER SOURCE: CH2
Adjustment Page	D
Adjustment Address	30 (REC C 1A (ME)), 32 (REC C 1B (ME)), 34 (REC C 2A (ME)), 36 (REC C 2B (ME))
Specified Value	A=40 ± 2 mVp-p

Note: Use a ME type tape.

Connection:

1) Connect Pin ㊻ of IC002 to GND with a 0.01 μF capacitor (1-101-004-00).
2) Connect Pin ④ of IC002 to GND with a 0.01 μF capacitor (1-101-004-00).

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing the data of page: D, address: 54, set data: 00. (Minimizing the REC Y RF level)
3) Connect CH1 probe of the oscilloscope to pin ⑦ of CN002 (REC 1a).
4) Change the data of page: D, address: 30, and adjust so that the CH1a REC C level (A) becomes the specified value.
   Note: By decreasing the REC C RF level of other channels (that is by decreasing the data of addresses 32, 34, and 36 in the adjustment of channel 1A), the signal level of the desired channel can be read more easily.
5) Press the PAUSE button of the adjusting remote control unit.
6) Adjust each REC C LEVEL of CH2a (address: 34), CH1b (address: 32) and CH2b (address: 36) in the same way.
7) Set the data memorized at step 2) to page: D, address: 54, and press the PAUSE button of the adjusting remote control unit.

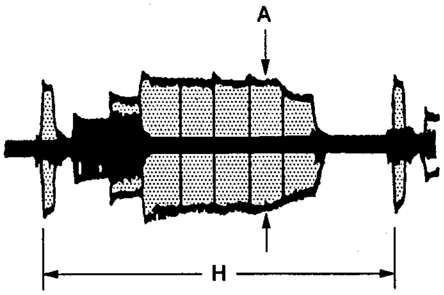


Fig. 10-22.

16. REC ATF Level Check (VC-134 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of CN001 (REC 1A)
Measuring Instrument	Oscilloscope
Specified Value	A=8.0 ± 3 mVp-p

Note: Use a MP type tape.

Connection:

1) Connect Pin ④ of IC002 to GND with a 0.01 μF capacitor (1-101-004-00).

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC ATF signal level (A) satisfies the specified value.
4) Turn the main power supply (7.2V) off.

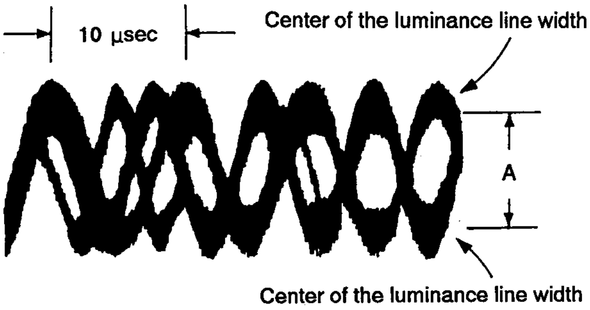

10 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 10-23.

17. Chroma Flicker Check and REC C RF Adjustment (VC-134 board)

Mode	Self recording/playback
Signal	Color bar (AV jack)
Measurement Point	CH-1 (1: 1 probe): Pin ㊷ of IC305 (PBC RF IN) CH-2 (10: 1 probe): Pin ⑩ of CN001 ($\overline{\text{1/2 RF SWP}}$)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment address	30 (REC C 1A (ME)), 31 (REC C 1A (MP)), 32 (REC C 1B (ME)), 33 (REC C 1B (MP)), 34 (REC C 2A (ME)), 35 (REC C 2A (MP)), 36 (REC C 2B (ME)), 37 (REC C 2B (MP))
Specified Value	$\frac{Vc1a}{Vc1b} \times 100 = 100^{+18}_{-16}$ (%) $\frac{Vc2a}{Vc2b} \times 100 = 100^{+18}_{-16}$ (%)

Note 1: Check that "REC C RF Preset Adjustment", and "REC ATF Level Check" have been completed.

2: Use a MP type tape.

Checking method:
1) Record the color bar signal.
2) Playback the recorded section.
3) Name each playback level of channels 1a, 1b, 2a, 2b to Vc1a, Vc1b, Vc2a, Vc2b respectively.
4) Check that the specified values have been satisfied. If not, perform the following adjustments.

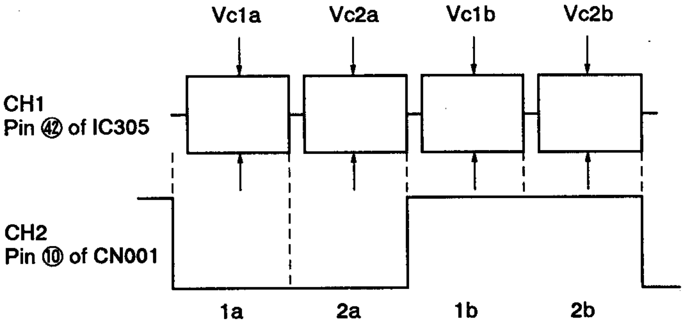


Fig. 10-24.

Adjusting method:
1) If the specifications are not satisfied, calculate the following values from the measuring values.
$\Delta Vc1 = |Vc1a - Vc1b|/2$
$\Delta Vc2 = |Vc2a - Vc2b|/2$

Note: | | is the absolute value.

2) The smaller value when the playback levels are Vc1a, Vc1b is
$$\left\{\frac{\text{(The smaller value of Vc1a and Vc1b)} + \Delta Vc1}{\text{(The smaller value of Vc1a and Vc1b)}}\right\} \times 33 \text{ (mVp-p)}$$
The greater value when the playback values are Vc1a, Vc1b is
$$\left\{\frac{\text{(The greater value of Vc1a and Vc1b)} - \Delta Vc1}{\text{(The greater value of Vc1a and Vc1b)}}\right\} \times 33 \text{ (mVp-p)}$$
The smaller value when the playback levels are Vc2a, Vc2b is
$$\left\{\frac{\text{(The smaller value of Vc2a and Vc2b)} + \Delta Vc2}{\text{(The smaller value of Vc2a and Vc2b)}}\right\} \times 33 \text{ (mVp-p)}$$
The greater value when the playback values are Vc2a, Vc2b is
$$\left\{\frac{\text{(The greater value of Vc2a and Vc2b)} - \Delta Vc2}{\text{(The greater value of Vc2a and Vc2b)}}\right\} \times 33 \text{ (mVp-p)}$$
3) Read the data of addresses, 31, 33, 35, and 37, and take them as D_{31}, D_{33}, D_{35}, and D_{37}.
4) Perform [MP REC C RF Preset Adjustment] with the value calculated from Vc1a, Vc1b, Vc2a, Vc2b at step 2), as the specified value for 1a, 1b, 2a, and 2b.
5) After the adjustment, perform "Chroma Flicker Check" again, and repeat the adjustment until the specified value is satisfied.
6) Read the new data of addresses 31, 33, 35, and 37, and take them as D_{31}', D_{33}', D_{35}', and D_{37}'.
7) Obtain the increase in the data of each channel using the following equation and add it to the data of addresses 30, 32, 34, and 36. (Subtract if the the numbers are negative.)
Address 30: $D_{31}' - D_{31}$
Address 32: $D_{33}' - D_{33}$
Address 34: $D_{35}' - D_{35}$
Address 36: $D_{37}' - D_{37}$

18. REC AFM Level Check (VC-134 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of CN001 (REC 1A)
Measuring Instrument	Oscilloscope
Specified Value	A=9.5 ± 3 mVp-p

Note: Use a MP type tape.

Connection:

1) Connect Pin ㊻ of IC002 to GND with a 0.01 μF capacitor (1-101-004-00).

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC AFM signal level (A) satisfies the specified value.
4) Turn the main power supply (7.2V) off.

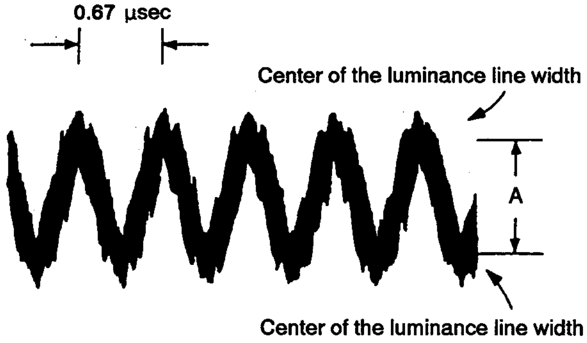

0.67 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 10-25.

10-6. LCD SYSTEM ADJUSTMENTS

Note 1: The backlight (fluorescent tube) is driven by a 600 Vp-p, 16 kHz AC power supply.
Therefore, be careful not to touch the backlight holder as you will receive an electric shock.

Note 2: When replacing the LCD unit, ensure there will be no damages by static electricity.

[Adjusting connector]

Most measuring points for adjusting the view-finder are concentrated at CPC of the PD-42 board. Connect the measuring equipments via the measuring pin tool. The following table lists the pin numbers and signal names of CPC.

Pin No.	Signal Name	Pin No.	Signal Name
1	VB	2	N.C
3	VG	4	N.C
5	VR	6	SPD
7	SYNC	8	$\overline{\text{HSY}}$
9	GND	10	GND

Table 10-4.

Measuring pin tool Parts Code: J-6082-192-A

[Positions of RVs during adjustments]

Unless specified otherwise, set RVs to the following positions and adjust.

RV001 (COLOR)·········· Mechanical center
RV002 (HUE)·············· Mechanical center

[Video Input Signal for Adjusting]

If the signal column specifies "Color bar signal whose chroma signal and burst signal are turned off", input a color bar signal whose chroma signal and burst signal have been turned off to the video input pin as the video input signal for adjusting. Check that the signal level of Pin ③ of CN552 of the EZ-6 board is Approx. 0.5 Vp-p before adjusting.

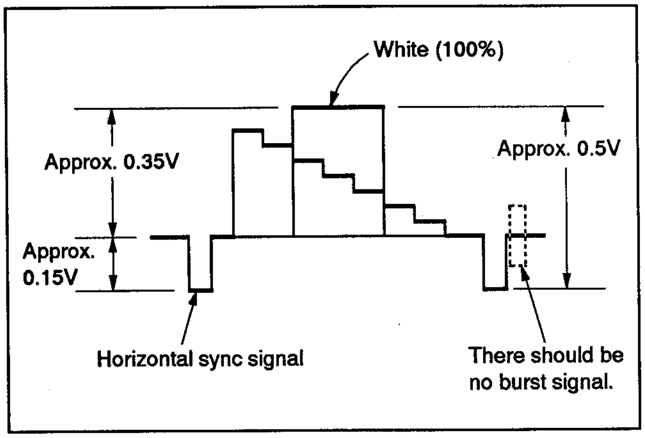


Fig. 10-26. Color bar signal whose chroma signal and burst signals are turned off

1. –8V Adjustment (PD-42 board)

Mode	Record
Signal	Color bar signal whose chroma signal and burst signal are turned off
Measurement Point	CL101 (C111 ⊕)
Measuring Instrument	Digital voltmeter
Adjustment Element	RV100
Specified Value	–8.0 ± 0.05Vdc

Adjusting method:
1) Adjust the voltage to specified value with RV100.

2. Power Supply Voltage Check (PD-42 Board)

Mode	Record
Measuring Instrument	Digital voltmeter
+13V check	
Measurement Point	CL100 (C104 ⊕)
Specified Value	13 ± 1Vdc
–20V check	
Measurement Point	CL102 (C114 ⊕)
Specified Value	–20 ± 2Vdc
4.9V check	
Measurement Point	CL105 (C128 ⊕)
Specified Value	4.9 ± 0.1Vdc

3. EVR Initial Data Input

Mode	STOP
Signal	Arbitary
Adjustment Page	D

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the data in the following table.
   Note: To write in the nonvolatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time the data is set.

Address	Data
8E (SUB BRIGHT B)	80
8F (H POSITION)	80
91 (CONTRAST)	80
92 (SUB BRIGHT R)	80
93 (V COM CONT)	80
94 (VCO CONT)	80
95 (BRIGHT)	80

4. Bright Adjustment (PD-42 board)

Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Pin ③ of CPC (VG)
Measuring Instrument	Oscilloscope External trigger: Pin ⑤ of IC002 (FRP)
Adjustment Page	D
Adjustment Address	95 (BRIGHT)
Specified Value	A=6.0 ± 0.1V

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 95, and adjust the amplitude level (A) of the VG signal to the specified value.
   Amplitude: Level difference between the reverse waveform pedestal and non-reversed waveform pedestal.
3) Press the PAUSE button of the adjusting remote commander.

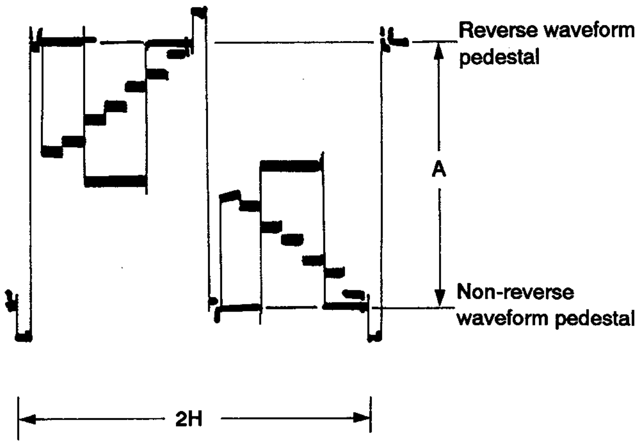


Fig. 10-27.

5. Contrast Adjustment (PD-42 board)

Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Pin ③ of CPC (VG)
Measuring Instrument	Oscilloscope External trigger: Pin ⑤ of IC002 (FRP)
Adjustment Page	D
Adjustment Address	91 (CONTRAST)
Specified Value	A=2.6 ± 0.1V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 91, and adjust the voltage (A) between the white (100%) and pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

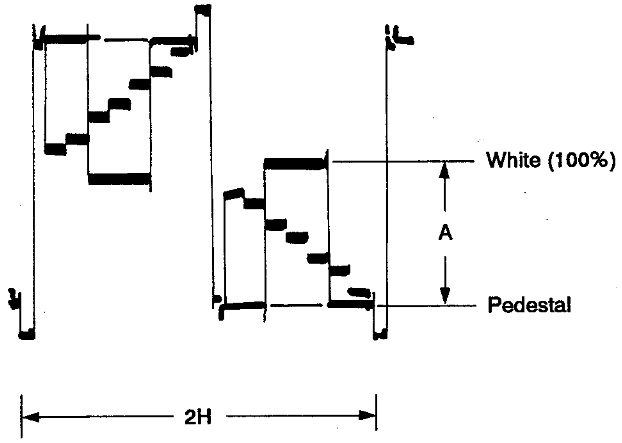


Fig. 10-28.

6. V COM Adjustment

Mode	Playback • pause
Signal	Alignment tape: For checking operations (WR5-5NSP) Color bar section
Measurement Point	Check on the LCD display
Measuring Instrument	
Adjustment Page	D
Adjustment Address	93 (V COM CONT)
Specified Value	

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 93, and adjust so that the vertical lines with intervals of 3 dots between them at the noise bar disappears.
3) Press the PAUSE button of the adjusting remote commander.

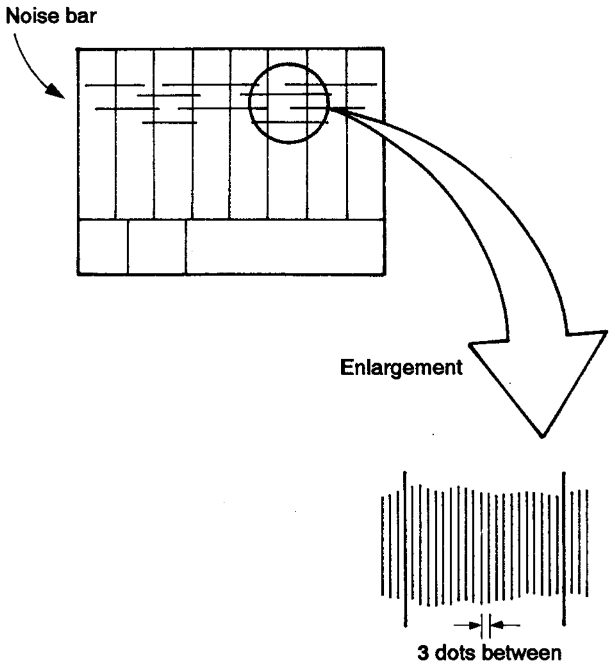


Fig. 10-29.

7. White Balance Preset Adjustment (1) (PD-42 board)

Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	CH1: Pin ③ of CPC (VG) CH2: Pin ⑤ of CPC (VR)
Measuring Instrument	Oscilloscope External trigger: Pin ⑤ of IC002 (FRP)
Adjustment Page	D
Adjustment Address	92 (SUB BRIGHT R)
Specified Value	Amplitude level difference between VR and VG signals=0 ± 0.1V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 92 and adjust the voltage (A) between the white (100%) and pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

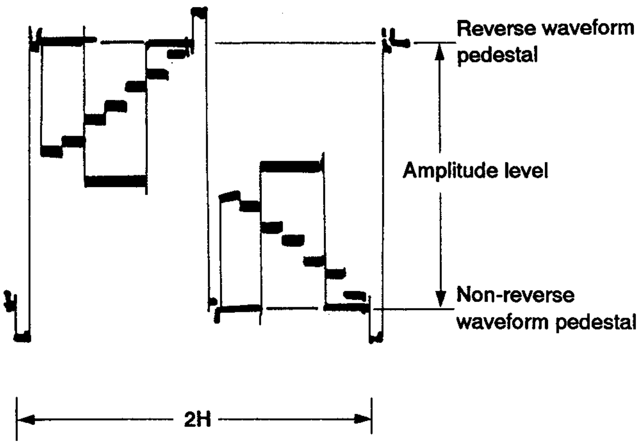

Reverse waveform pedestal
Amplitude level
Non-reverse waveform pedestal
2H

Fig. 10-30.

8. White Balance Preset Adjustment (2) (PD-42 board)

Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	CH1: Pin ③ of CPC (VG) CH2: Pin ① of CPC (VB)
Measuring Instrument	Oscilloscope External trigger: Pin ⑤ of IC002 (FRP)
Adjustment Page	D
Adjustment Address	8E (SUB BRIGHT B)
Specified Value	Amplitude level difference between VR and VG signals=0 ± 0.1V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 8E and adjust the voltage (A) between the white (100%) and pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

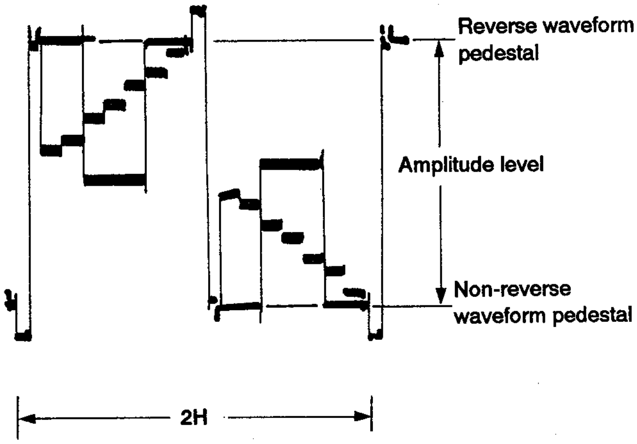

Reverse waveform pedestal
Amplitude level
Non-reverse waveform pedestal
2H

Fig. 10-31.

9. White Balance Adjustment

Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Check on the LCD display
Measuring Instrument	
Adjustment Page	D
Adjustment Address	92 (SUB BRIGHT R), 8E (SUB BRIGHT B)
Specified Value	The display should not be colored

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Check that the LCD display is not colored. If it is, change the data of address: 92 and address: 8E of page: D, and adjustment the display is not colored.
3) Press the PAUSE button of the adjusting remote commander.

10. VCO Adjustment (PD-42 board)

Mode	STOP
Signal	No signal
Measurement Point	Pin ⑧ of CPC ($\overline{\text{HSY}}$)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	97 (VCO CONT)
Specified Value	f=15734 ± 30 Hz

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 00 to page: 2, address: 00.
   (Specification of category 00)
3) Set data: 08 to page: 2, address: AE.
   (Inhibit of SG communication)
4) Set data: 00 to page: 2, address: B4.
   (Setting of SYNC STOP mode)
5) Change the data of page: D, address: 94 and adjust the frequency to the specified value.
6) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustment
1) Set data: 00 to page: 2, address: AE.
2) Set data: 80 to page: 2, address: B4.
3) Set data: 00 to page: 2, address: 00.

11. Horizontal Display Position Adjustment (PD-42 board)

Mode	Record
Signal	Color bar
Measurement Point	CH1: Pin ⑥ of CPC (SPD) CH2: Pin ⑦ of CPC (H SYNC)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	8F (H POSITION)
Specified Value	T=2.5 ± 0.4 μsec

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 8F, and adjust the delay time (T) to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

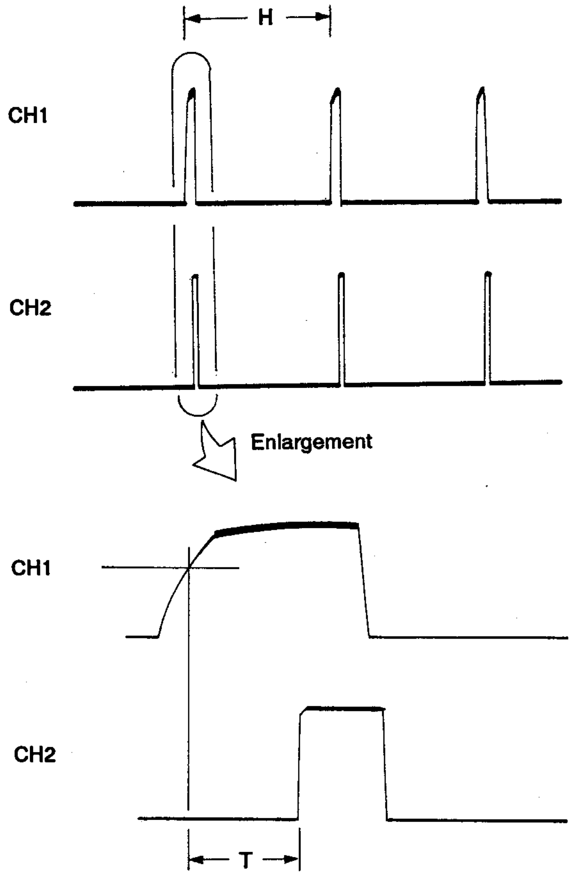


Fig. 10-32.

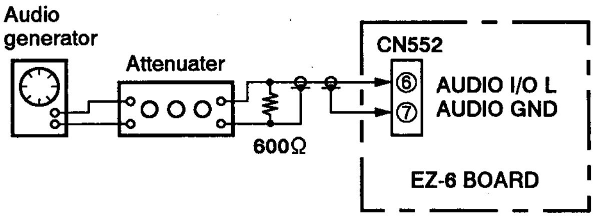
10-7. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments besides the video system measuring instruments as shown in Fig. 10-33, and perform adjustments with the power switch [player] position.

- Connection of Audio generator and attenuator.



Note: Always set the REC mode when adjusting the audio signal input level.

- Connection of Audio level meter or distortion meter

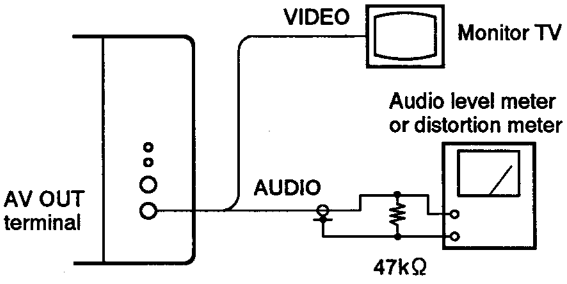


Fig. 10-33.

[Adjustment Procedure]

1) E-E output level check
2) IR adjustment
3) Deviation adjustment
4) Carrier frequency check
5) Carrier level check
6) Overall level characteristics, distortion check

1. E-E Output Level Check

Mode	Record
Signal	400 Hz, –7.5 dBs, pin ⑥ of CN552 on EZ-6 board
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

2. IR Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP)
Measurement Point	Audio output terminal
Measuring Instrument	Distortion meter
Adjustment Page	D
Adjustment Address	7A (1.5 IR)
Specified Value	Minimum distortion

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7A and adjust so that the distortion is minimum.
3) Press the PAUSE button of the adjusting remote control unit.

3. Deviation Adjustment

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5NSP)
Measurement Point	Audio output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	–7.5 ± 0.5 dBs

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

4. Carrier Frequency Check (VC-134 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of IC800 (REC AFM)
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:

1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

5. Carrier Level Check (VC-134 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of IC800 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	A=Approx. 300 mVp-p

Checking method:

1) Check that the 1.5 MHz carrier level satisfies the specified value.

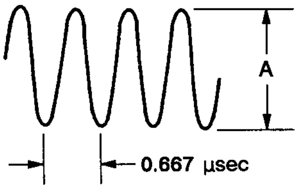


Fig. 10-34.

6. Overall Level Characteristic, Distortion Check

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs, Pin ⑥ of CN552 on EZ-6 board
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 2.5 dBs Distortion rate: Below 0.5% (Note 1)

Note: 1) Value when the following filter is used

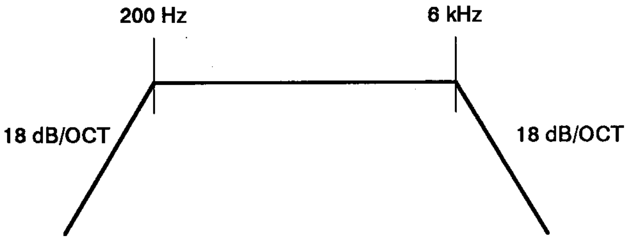


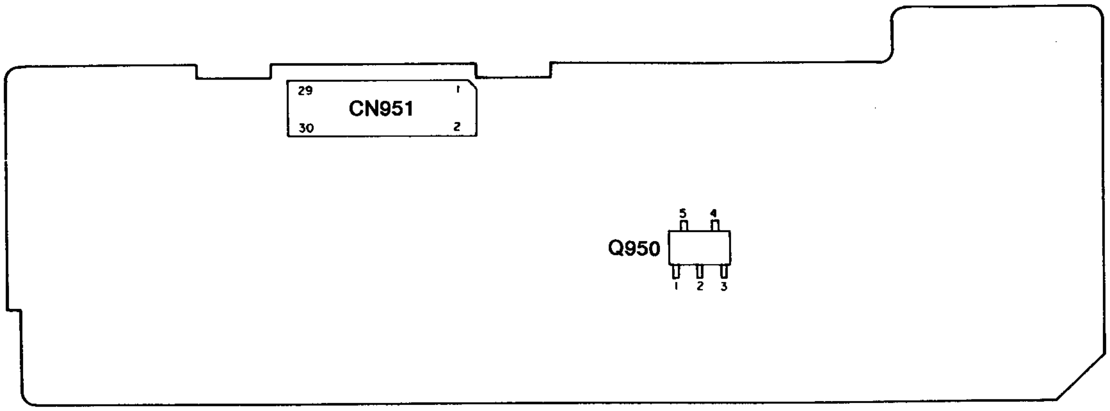
Fig. 10-35.

Checking method:

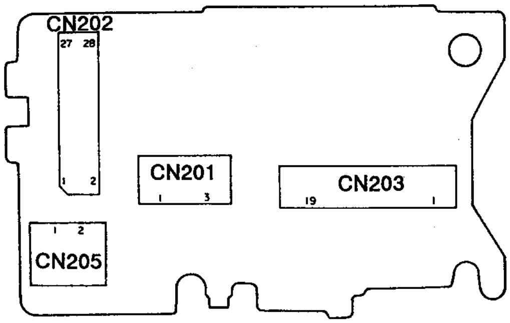
1) Input the 400 Hz, –7.5 dBs signal to Pin ⑥ of CN552 on EZ-6 board.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal is –7.5 ± 2.5 dBs, and that the distortion rate is below 0.5% (Note 1).

10-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

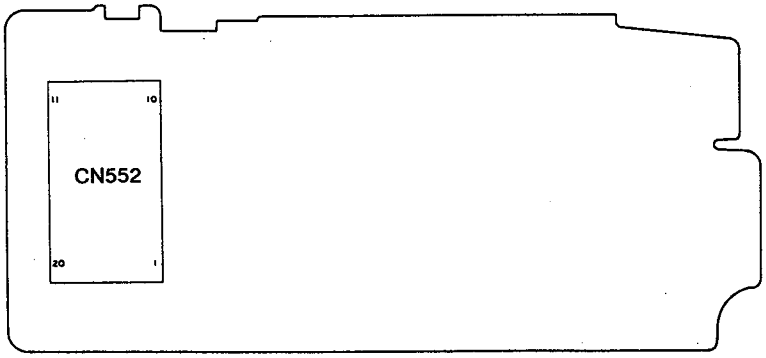
DD-57 BOARD (CONDUCTOR SIDE)


29
1
CN951
30
2
Q950
5
4
1
2
3

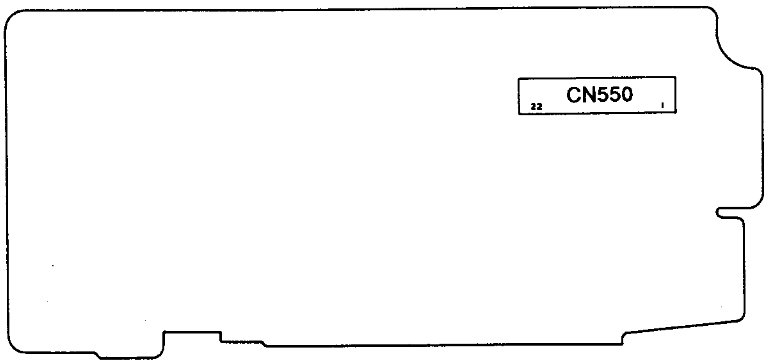
SD-10 BOARD (CONDUCTOR SIDE)


CN202
27
28
1
2
CN201
1
3
CN203
19
1
1
2
CN205

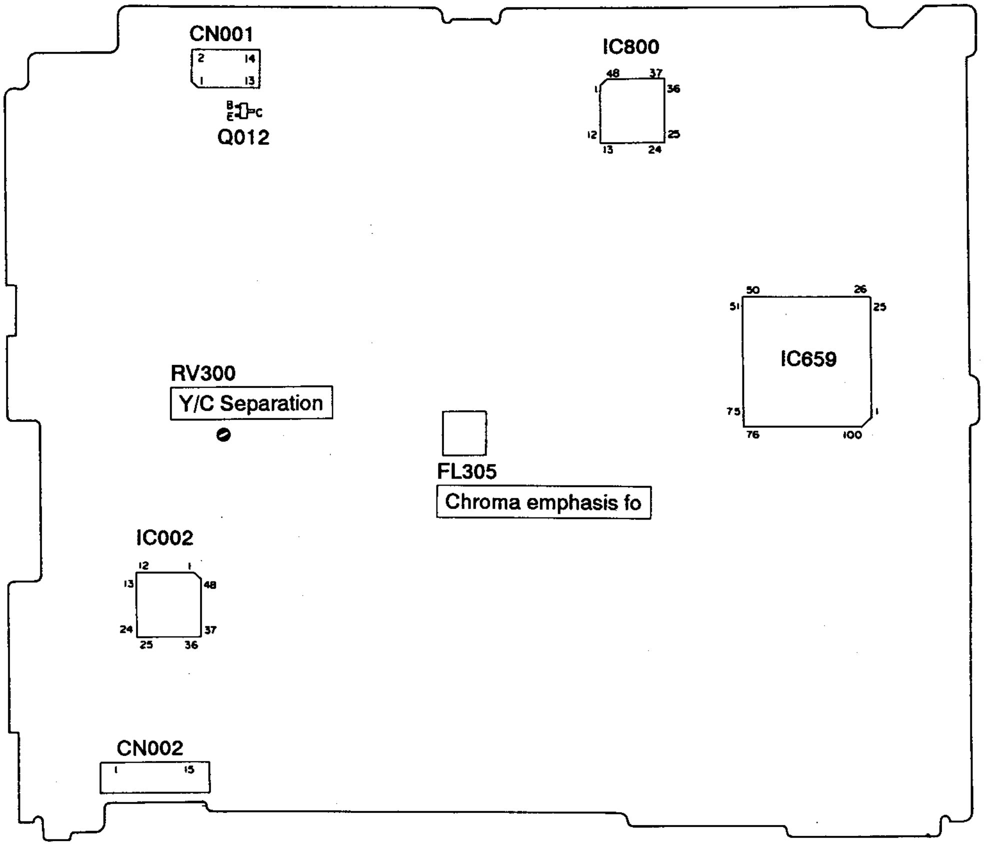
EZ-6 BOARD (COMPONENT SIDE)


11
10
CN552
20
1

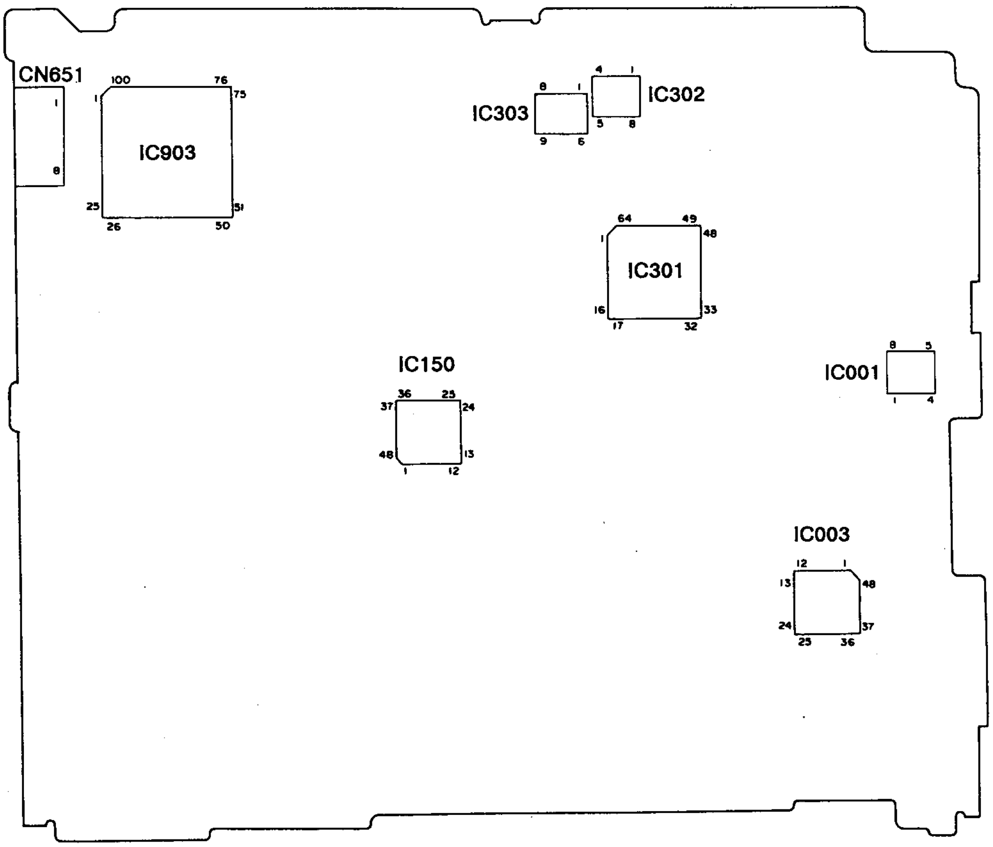
EZ-6 BOARD (CONDUCTOR SIDE)



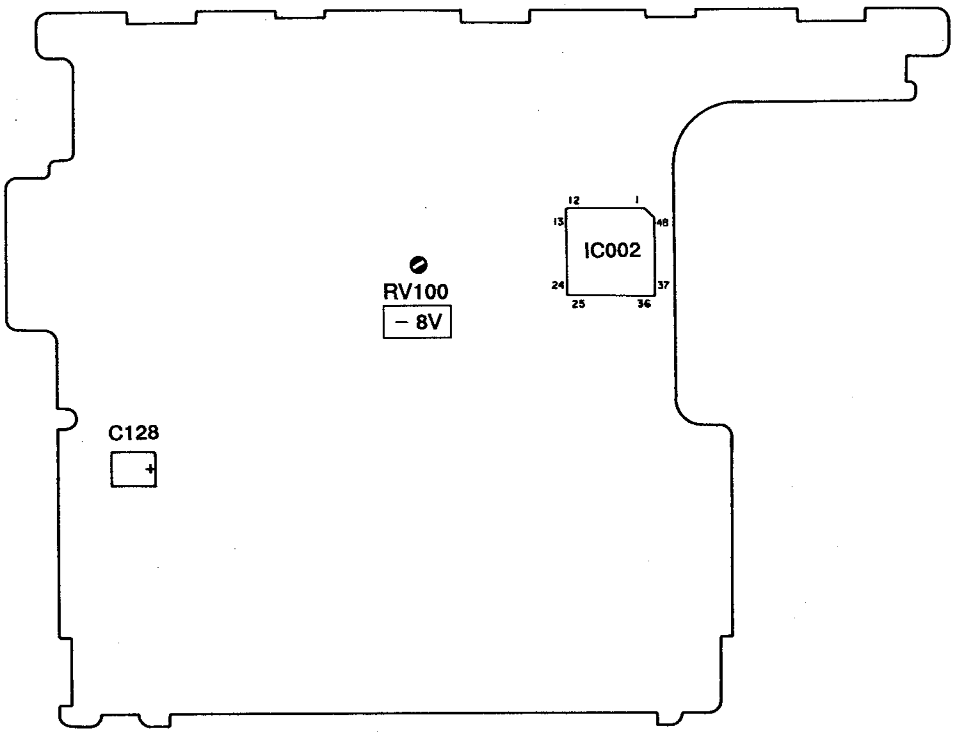
VC-134 BOARD (COMPONENT SIDE)


CN001
2
14
1
13
B
E
C
Q012
IC800
48
37
1
36
12
25
13
24
50
26
51
25
IC659
75
1
76
100
RV300
Y/C Separation
FL305
Chroma emphasis fo
IC002
12
1
13
48
24
37
25
36
CN002
1
15

VC-134 BOARD (CONDUCTOR SIDE)

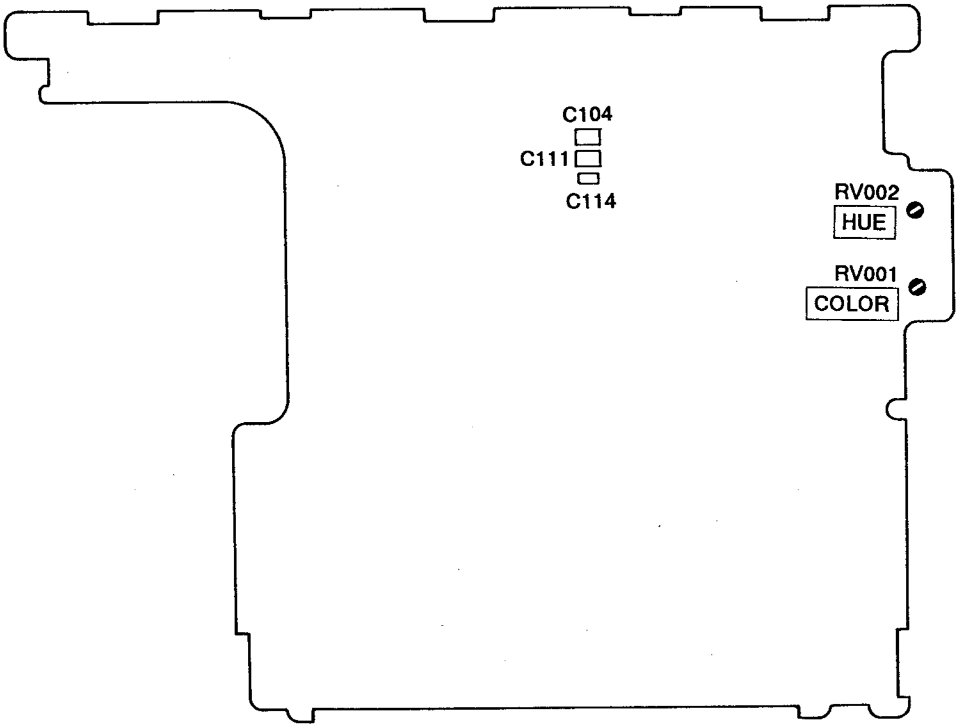

CN651
1
8
100
76
1
75
IC903
25
51
26
50
8
1
IC303
9
6
4
1
IC302
5
8
64
49
1
48
IC301
16
33
17
32
IC150
36
25
37
24
48
13
1
12
IC001
8
5
1
4
IC003
12
1
13
48
24
37
25
36

PD-42 BOARD (COMPONENT SIDE)



RV100
– 8V
IC002
12
1
13
48
24
37
25
36
C128
+

PD-42 BOARD (CONDUCTOR SIDE)



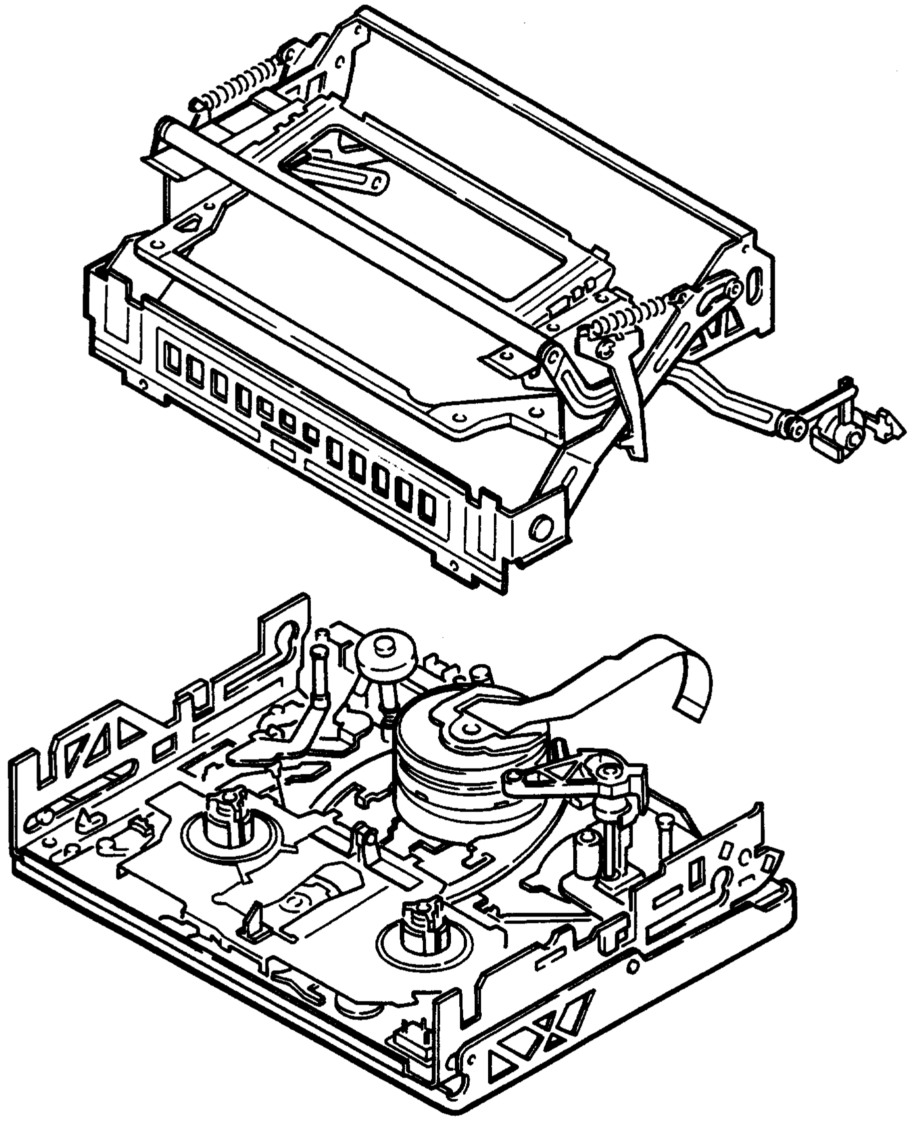
C104
C111
C114
RV002
HUE
RV001
COLOR

8mm Video MECHANICAL ADJUSTMENT MANUAL VI

TK MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO MECHANISM

SONY®

MICROFILM

TABLE OF CONTENTS

Section Title Page

1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND MAINTENANCE

1-1. Cassette Compartment Holder Assembly ·········· 3
1-2. HP Arm Block Assembly ·········· 4
1-3. Operating with the Cassette Compartment Holder Assembly Removed ·········· 5

2. PERIODIC CHECK AND MAINTENANCE

2-1. Cleaning of Rotary Drum Assembly ·········· 6
2-2. Cleaning of Tape Path System ·········· 6
2-3. Periodic Checks ·········· 7
2-4. Service Jigs List ·········· 8

3. MECHANISM SECTION CHECKS, ADJUSTMENTS, AND REPLACEMENTS

3-1. Retainer Assembly ·········· 9
3-2. S Reel Table Assembly ·········· 10
3-3. T Reel Table Assembly ·········· 11
3-4. T Soft Gear Assembly, T Soft Arm, T Soft Release Arm ·········· 12
3-5. S Ratchet ·········· 13
3-6. LS Chassis Assembly ·········· 14
3-7. Pinch Arm Assembly ·········· 17
3-8. TG-9 Arm Assembly ·········· 18
3-9. TG-1 Arm Assembly ·········· 19
3-10. T Ratchet ·········· 20
3-11. Coaster S Assembly, Coaster T Assembly, S Rail, T Rail, S Arm Assembly, T Arm Assembly ·········· 20
3-12. Pinch Release Arm Assembly ·········· 21
3-13. M Slider ·········· 22
3-14. Loading Motor Assembly, TG-3 Assembly ·········· 23
3-15. Capstan Motor Assembly ·········· 24
3-16. Drum Base Assembly ·········· 25
3-17. Drum Assembly ·········· 26
3-18. Replacement of Upper Rotary Drum Assembly ·········· 27
3-19. Reel Table Height Check ·········· 29
3-20. FWD/RVS Torque Check ·········· 29
3-21. Tension Regulator Position Adjustment ·········· 30
3-22. FWD Back Tension Adjustment ·········· 31

Section Title Page

4. TAPE PATH ADJUSTMENT

4-1. Preparations for Adjustment ·········· 32
4-2. Tracking Adjustment ·········· 33
4-3. No.3 Guide (TG-3) Adjustment ·········· 33
4-4. No. 9 Guide (TG-9) Adjustment ·········· 34
4-5. Checks After Adjustments ·········· 34

5. EXPLODED VIEWS

Cassette Compartment Block Assembly ·········· 36
LS Chassis Block Assembly ·········· 37
Mechanism Chassis Assembly (1) ·········· 38
Mechanism Chassis Assembly (2) ·········· 39

6. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM ·········· 40

7. ELECTRICAL PARTS LIST ·········· 41

1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND MAINTENANCE

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the $\boxed{\text{USE}}$ mode. (To select the $\boxed{\text{USE}}$ mode, refer to the section "Handling of Mode Selector II " in supplement-1 of the separate volume.

1-1. CASSETTE COMPARTMENT HOLDER ASSEMBLY (Fig. 1)

1. Removing

1) Set the $\boxed{\text{USE}}$ mode.
2) Remove the claw ② of the damper assembly ①, slide the damper assembly in the direction of arrow 🅐 and remove it.
3) Remove the two screws ④.
4) Rotate the cassette compartment holder assembly ⑤ in the direction of arrow 🅑, next slide it in the direction of arrow 🅒, and remove the C rollers ⑧ and ⑨ from the long holes ⑥ and ⑦.

2. Attaching

1) Set the $\boxed{\text{USE}}$ mode.
2) Insert the C rollers ⑧ and ⑨ into the long holes ⑥ and ⑦ and slide the cassette compartment holder assembly in the opposite direction of arrow 🅒.
   Note: Make sure the C rollers ⑧ and ⑨ have been inserted properly into the long holes ⑥ and ⑦.
3) Rotate the cassette compartment holder assembly ⑤ in the opposite direction of arrow 🅑.
   Note: Make sure the C lock plate ⑩ is inside the LS chassis.
4) Attach the two screws ④.
5) Insert the shaft into the hole of the damper arm, insert the claw ③ of the damper assembly ① into the hole ⑪ of the LS chassis, slide the damper in the opposite direction of arrow 🅐, and fix the claw ②.
   Note: Make sure the claws ② and ③ of the damper assembly are fixed on properly.

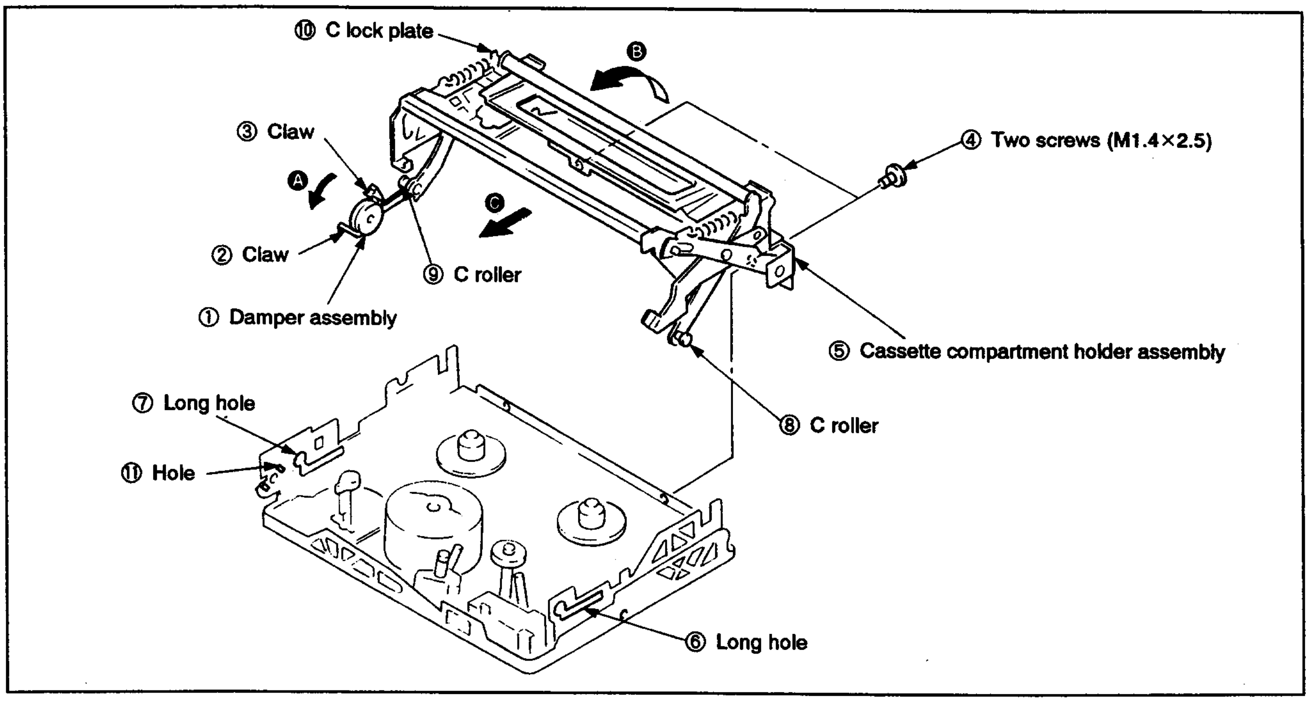


Fig. 1.

1-2. HP ARM BLOCK ASSEMBLY

1. Removing

1) Set the unit to the $\boxed{\text{EJECT}}$ position with the cassette compartment holder assembly removed or attached.
2) Move the HP arm block assembly in the direction of arrow Ⓐ with your hand. (See Fig. 2-B.)

Note: As the HC roller of the HP arm block assembly will not touch the drum in the EJECT position, move it away from the drum with your hand. (See Fig. 2-A.)

3) Remove the screw ①, and in the state of 2), remove the HP arm block assembly in the direction of arrow Ⓑ.

2) Attaching

1) Set the unit to the $\boxed{\text{EJECT}}$ position.
2) Hold the HP plate with your fingers and press the HP lever at the part indicated in Fig. 2-B.
3) In the state of 2), attach the HP arm block assembly to the capstan motor.

Note: When attaching, make sure that the HC roller does not touch the drum.

4) Adjust the hole of the HP plate to the positioning dowel, tighten the screw ①, and attach the HP arm block assembly.

Note: When attaching, be careful not to touch the tension spring with your hand and change its shape.

5) After attaching, check that it works properly. First, check that the HP arm block assembly is attached at the position shown in Fig. 2-A. Next, check that the HC roller moves away from the drum when the HP lever is rotated in the direction of arrow Ⓐ shown in Fig. 2-B.

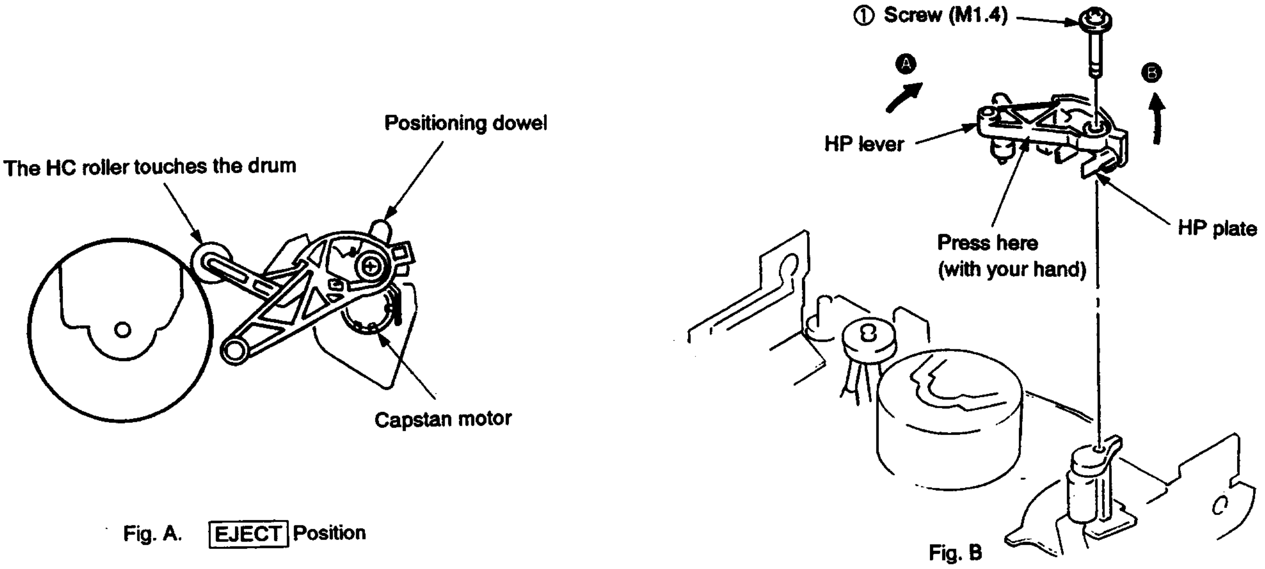


Fig. A. $\boxed{\text{EJECT}}$ Position

Fig. B

Fig. 2.

1-3. OPERATING WITH THE CASSETTE COMPARTMENT HOLDER ASSEMBLY REMOVED

1. Loading (See Fig. 3.)

1) Remove the HP arm block assembly according to section 1-2.
2) Refer to the service manual, and with the cabinet and camera section removed, supply the power. (So that the mechanism deck can be operated.)
3) Set the TEST mode using the adjusting remote commander. (Ref No. J-13)
4) Press the knob of the push switch ① in the direction of the arrow. The set will be set into loading.

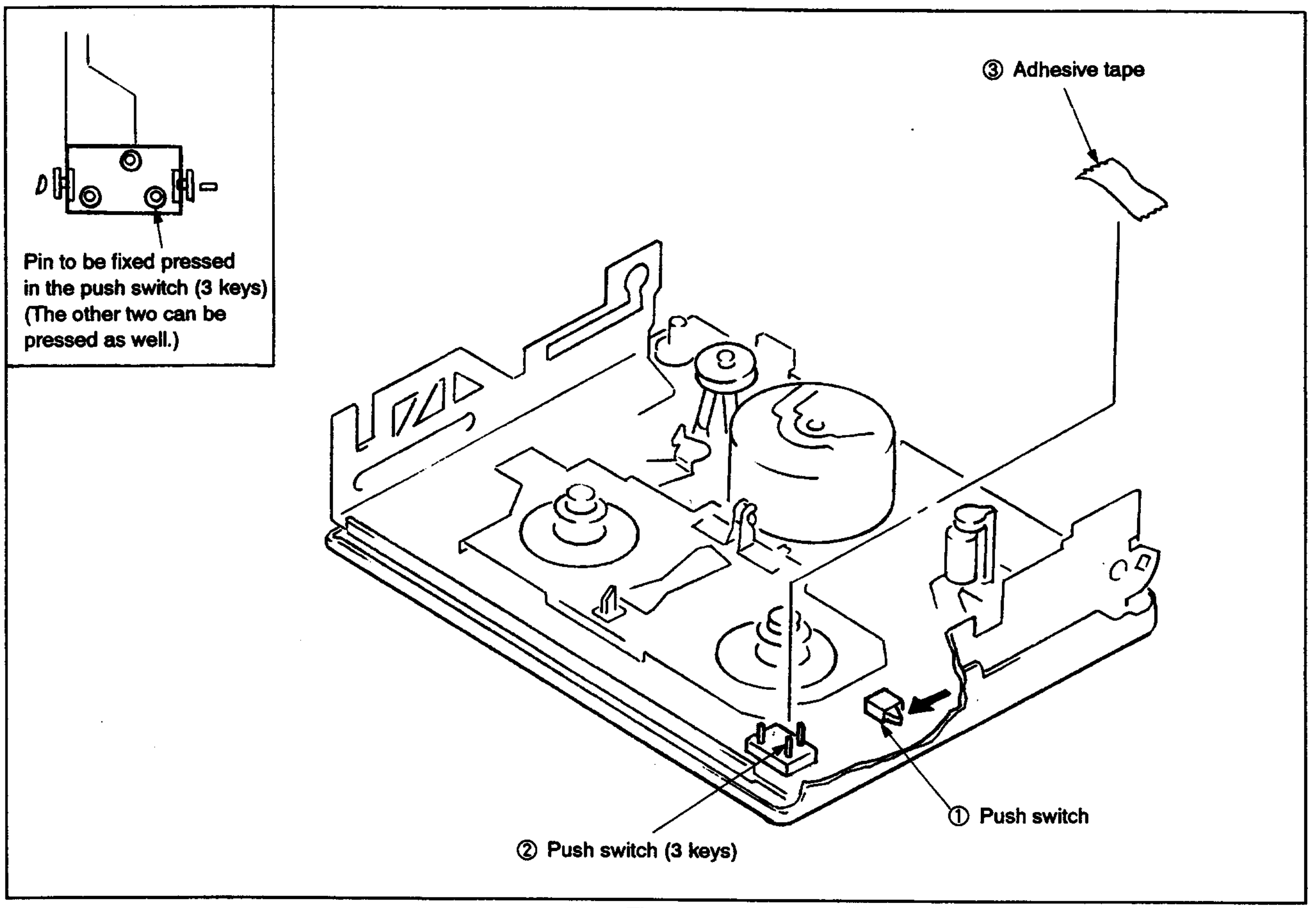
☆ PB, FF/REW, QUE/REV can be carried out in this state.

2. Setting REC

1) Push the pin of the push switch (3 keys) ② shown in the figure (ON) and fix it with adhesive tape ③.
2) Next, set the power supply switch of the set to VTR (or CAMERA).
3) Turn on the REC switch.
(When the TEST mode is set, the rotation detection of S and T reel tables and T/E sensor, etc. will stop operating and the tape can be run.)

3. Ejecting

1) Turn on the EJECT switch.



Pin to be fixed pressed in the push switch (3 keys) (The other two can be pressed as well.)

Fig. 3.

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks not only to fully display the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regardless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Press a chamois cloth (Ref No. J-2) moistened with cleaning fluid (Ref No. J-1) against the rotary drum assembly gently, and clean it while rotating the upper rotary drum assembly slowly with your finger in the counterclockwise direction.

Note: Do not rotate the motor on power or rotate the upper rotary drum assembly in the clockwise direction with your finger. The head tip will also be damaged if the chamois cloth is moved perpendicularly against it. Therefore, be sure to follow the above instructions when cleaning the rotary drum assembly.

2-2. CLEANING OF TAPE PATH SYSTEM (See Fig. 4.)

1) In the EJECT mode, clean the tape path systems (TG-1, 2, 3, 4, 5, 6, 7, 8, 9, pinch roller, capstan shaft) and the lower drum using a superfine applicator (Ref No. J-3) moistened with cleaning fluid.

Note: Make sure that no oil or grease of the link mechanisms sticks to the superfine applicator (Ref No. J-3.)

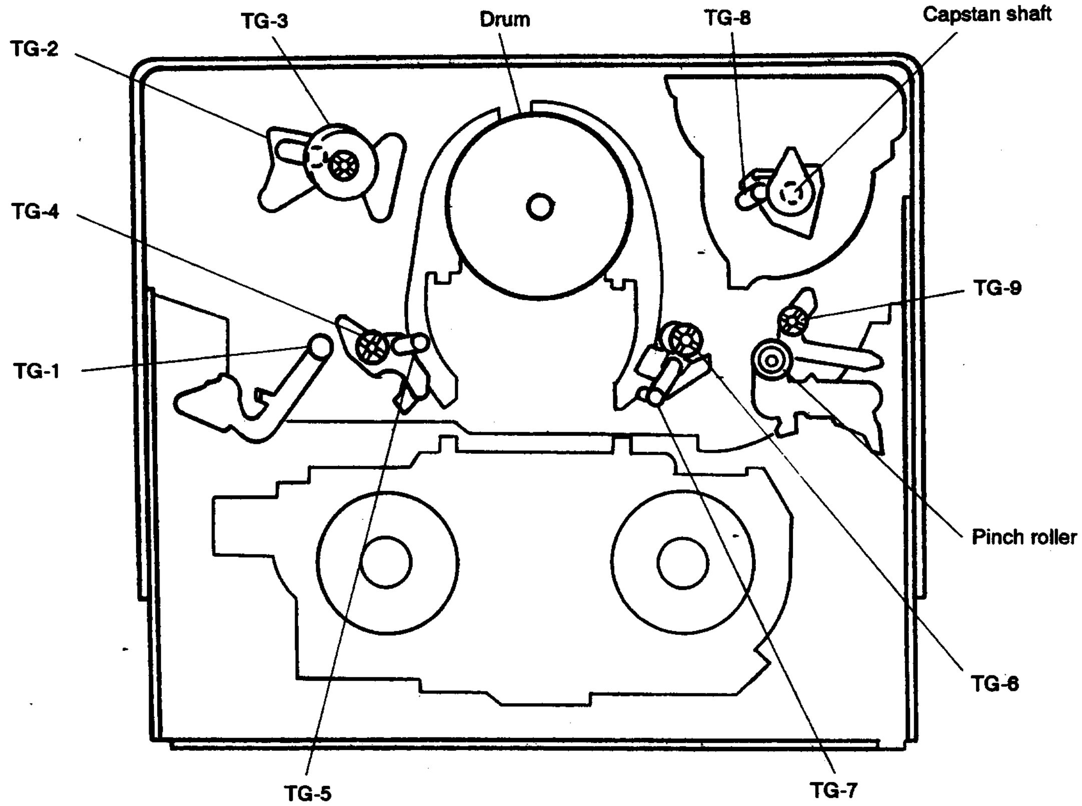


Fig. 4.

2-3. PERIODIC CHECKS

Location of Maintenance and Check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of the oil
	Cleaning and degaussing of rotary drum assembly	○	○	○	○	○	○	○	○	○	○	Be careful of the oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-954-789-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Make sure that no oil gets on the tape path surface.
	Conversion gear shaft Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	X-3943-127-1
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD RVS } Torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note: When overhauling, refer to the checks above and replace parts.

Note: Oiling

- Be sure to use the specified oil. (If the viscosity of the oil is different, etc., problems may result.)
  Oil: Part No. 7-661-018-18
  (Mitsubishi Diamond Oil Hydrofluid NT-68)
- When lubricating bearings, be sure to use oil free from dust, etc. (If oil containing dusts, etc. is used, bearings may wear out, burn, etc.)
- A drop of oil means the amount on the tip of a 2 mm diameter stick as shown in the Fig 5.

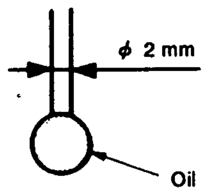


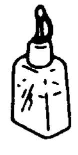
Fig. 5.

2-4. SERVICE JIGS LIST

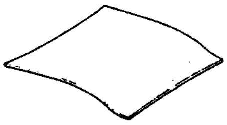
Ref. No.	Name	Part No.	Fixture No.	Usage, Others
J-1	Cleaning fluid	Y-2031-001-0	——	
J-2	Chamois cloth	2-034-697-00	——	
J-3	Super fine applicator (Made by NIPPON APPLICATOR (P752D))		——	
J-4	Head degausser	Any sold	——	
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-A	SL-5052	Tape path
J-6	Alignment tape (WR5-1N)	8-967-995-01		Tape path
J-7	Dial tension gauge	J-6080-827-A		Various torque measurement
J-8	Tension measurement reel	J-6080-831-A		With ϕ 30 tape
J-9	Tension measurement reel	J-6080-832-A		With ϕ 16 string
J-10	FWD and RVS take-up torque cassette	J-6080-824-A	GD-2086	
J-11	Drum screwdriver (Hexagonal wrench screwdriver)	7-700-766-01		
J-12	Screwdriver for tape path	J-6082-026-A		For adjusting tape guide
J-13	Adjusting remote commander (RM-95-remodeled partly)[Note 1]	J-6082-053-A		
J-14	Mode selector II	J-6082-282-A		For all models

Other equipment used
- Oscilloscope
- Analog tester (20 kΩ)

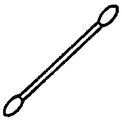
J-1



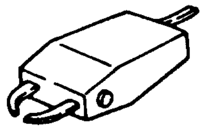
J-2



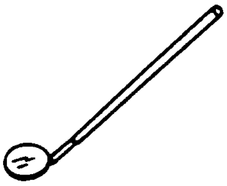
J-3



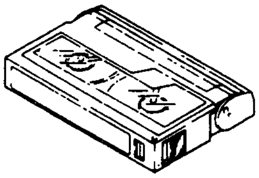
J-4



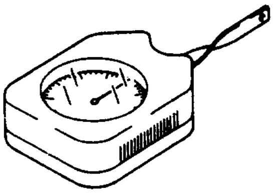
J-5



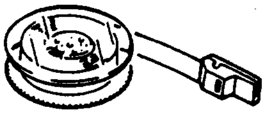
J-6



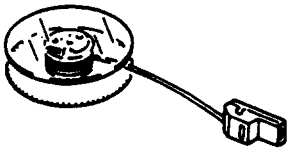
J-7



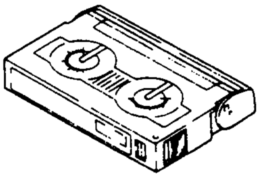
J-8



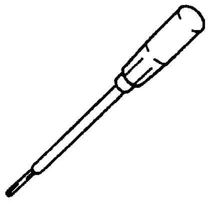
J-9



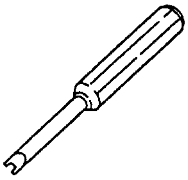
J-10



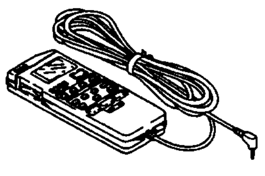
J-11



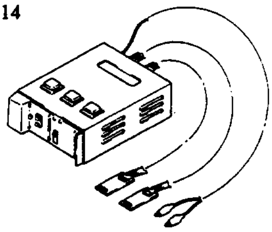
J-12



J-13



J-14



Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

3. MECHANISM SECTION CHECKS, ADJUSTMENTS, AND REPLACEMENTS

Note: Use the mode selector II (Ref No. J-14) in the checks, adjustments, and replacements for this mechanism section.

Note: The mode in ☐ is set by pressing the button of the mode selector.

3-1. RETAINER ASSEMBLY (See Fig. 6.)

1. Removing

1) Set the USE mode.
2) Refer to 1-1 and remove the cassette compartment holder assembly.
3) Rotate the LED in the direction of arrow Ⓐ as shown in Fig. A and remove it the direction of arrow Ⓑ.
4) Remove the screw ①.
5) Rotate the lever (Outsert) ⑦ in the clockwise direction and remove the claw ④.
6) While lifting up the retainer assembly ⑤, push it the direction of arrow Ⓒ and remove it.

Note: Be careful when attaching and removing the retainer assembly as the shape of its LED holder changes easily.

2. Attaching

1) Set the USE mode.
2) Insert the claws ②, ③ of the retainer assembly ⑤ into the two hooks ⑥ of the LS chassis without sandwiching the LED.
3) Fix the screw ①.
4) Rotate the lever (Outsert) ⑦ in the counterclockwise direction so that it comes on top of the claw ④.
5) As shown in Fig. B, insert the LED in the direction of arrow Ⓐ, rotate it in the direction of arrow Ⓑ and attach it.
6) As shown in Fig. C, bend a flexible board and put it in the holder.
7) Refer to 1-1 and attach the cassette compartment holder assembly.

Note: Check that the pin ⑧ of the gooseneck gear assembly protrudes out of the hole on the retainer assembly. (See Fig. D.)

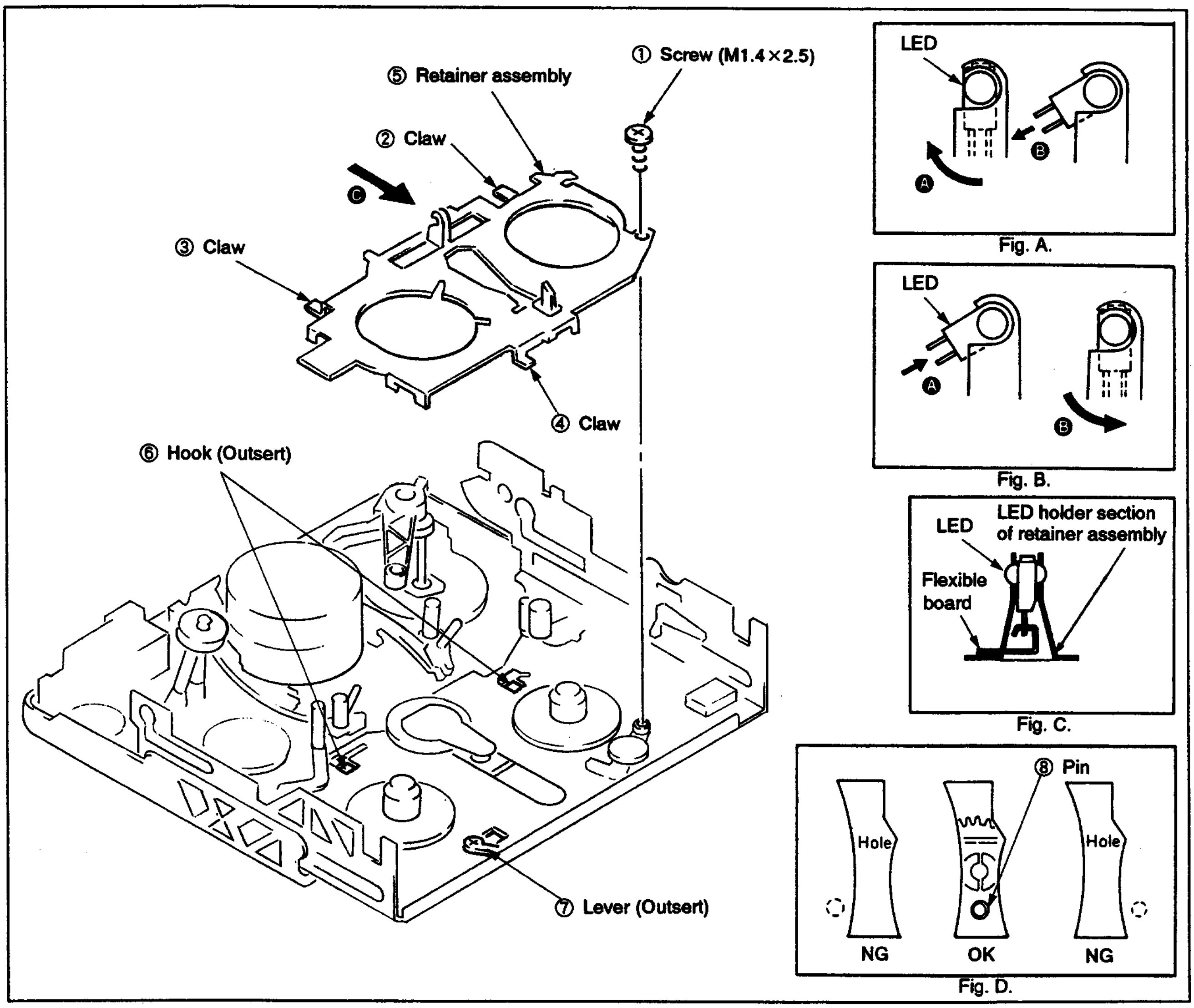

① Screw (M1.4×2.5)
⑤ Retainer assembly
② Claw
Ⓒ
③ Claw
④ Claw
⑥ Hook (Outsert)
⑦ Lever (Outsert)
LED
Ⓐ
Ⓑ
LED
Ⓐ
Ⓑ
LED
LED holder section of retainer assembly
Flexible board
⑧ Pin
Hole
Hole
NG
OK
NG

Fig. A.

Fig. B.

Fig. C.

Fig. D.

Fig. 6.

3-2. S REEL TABLE ASSEMBLY (See Fig. 7.)

1. Removing

1) Set the USE mode.
2) Refer to 1-1 and remove the cassette compartment holder assembly.
3) Refer to 3-1 and remove the retainer assembly.
4) Remove the washer ④.
5) Remove the screw ① and remove the adjusting block ② from the boss of the LS chassis.
   Next, remove the tension regulator string ③ from the groove of the S reel table in the counterclockwise direction without changing its shape.

Note: Be careful that grease does not get onto the tension regulator string ③ , etc. and do not hold it with bare hands.

6) Remove the S reel table assembly ⑥.

Note: Hold the reel claw ※ when removing and attaching the S reel table assembly ⑥.

2. Attaching

1) Set to the USE mode.
2) As shown in Fig. B, move the S ratchet ⑤ in the direction of arrow 🅐.
3) Attach the S reel table assembly ⑥ to the shaft ⑦. Attach the washer ④.
4) Hold the adjusting block and insert the tension regulator string ③ into the groove of the S reel table in the clockwise direction and finally place the adjusting block ② on top of the boss of the LS chassis.
5) Tighten the screw ①.

Note: Do not tighten it too tightly because the tension regular position adjustment is to be carried out later.

6) Refer to 3-21 and adjust the tension regulator position.
7) Refer to 3-22 and adjust the FWD back tension.
8) Refer to 3-1 and attach the retainer.
9) Refer to 1-1 and attach the cassette compartment holder assembly.

Note: Do not hold the tension regulator string ③ with bare hands. Be careful that grease does not get onto it, etc.

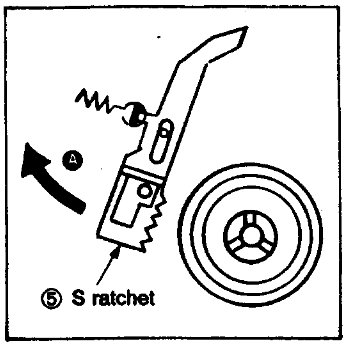


Fig. B.

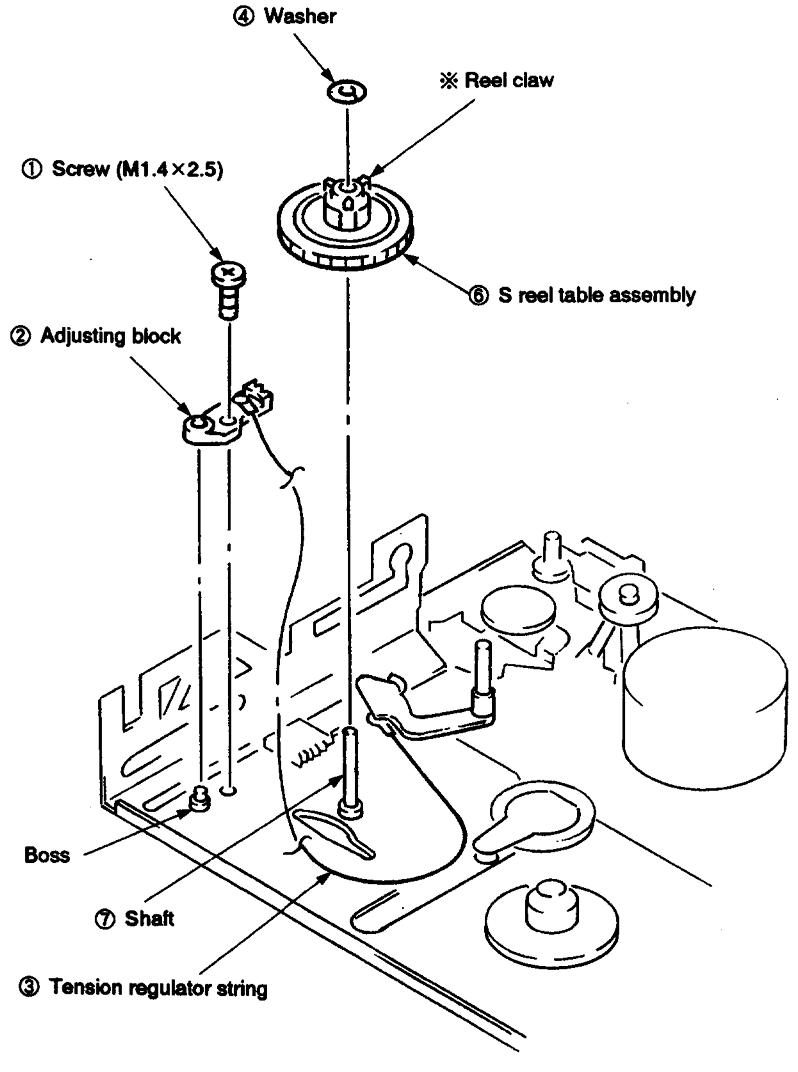


Fig. 7.

3-3. T REEL TABLE ASSEMBLY (See Fig. 8.)

1. Removing

1) Set the $\boxed{\text{USE}}$ mode.
2) Refer to 1-1 and remove the cassette compartment holder assembly.
3) Refer to 3-1 and remove the retainer assembly.
4) Remove the T reel table assembly ①.

Note: Hold the reel claw ※ when removing and attaching the T reel table assembly ①.

2. Attaching

1) Set the $\boxed{\text{USE}}$ mode.
2) As shown in Fig. A, apply a layer of oil on the shaft ② using a cotton stick.

Note: Do not apply too much.

3) Attach the T reel table assembly ① to the shaft ②.
4) Refer to 3-1 and attach the retainer assembly.
5) Refer to 1-1 and attach the cassette compartment holder assembly.

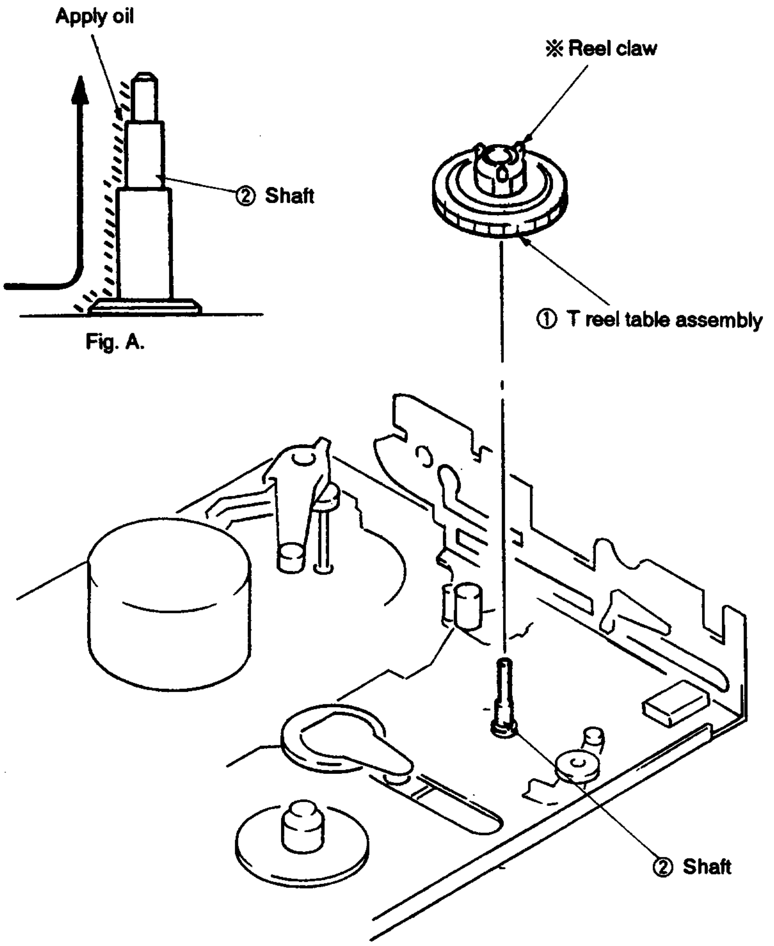


Fig. A.

Fig. 8.

3-4. T SOFT GEAR ASSEMBLY, T SOFT ARM, T SOFT RELEASE ARM (See Fig. 9.)

1. Removing

1) Set the USE mode.
2) Refer to 1-1 and remove the cassette compartment holder assembly.
3) Refer to 3-1 and remove the retainer assembly.
4) Refer to 3-3 and remove the T reel table assembly.
5) Remove the T soft gear assembly ②.
6) Remove the tension coil spring ①.
7) Remove the T soft arm ③.
8) Rotate the T soft release arm ④ in the counterclockwise direction and remove it.

2. Attaching

1) Set the USE mode.
2) Attach the T soft release arm ④ and rotate it in the clockwise direction.
3) Attach the T soft arm ③.
4) Attach the tension coil spring ①.
5) Attach the T soft gear assembly ②.
6) Refer to 3-3 and attach the T reel table.
7) Refer to 3-1 and attach the retainer assembly.
8) Refer to 1-1 and attach the cassette compartment holder assembly.

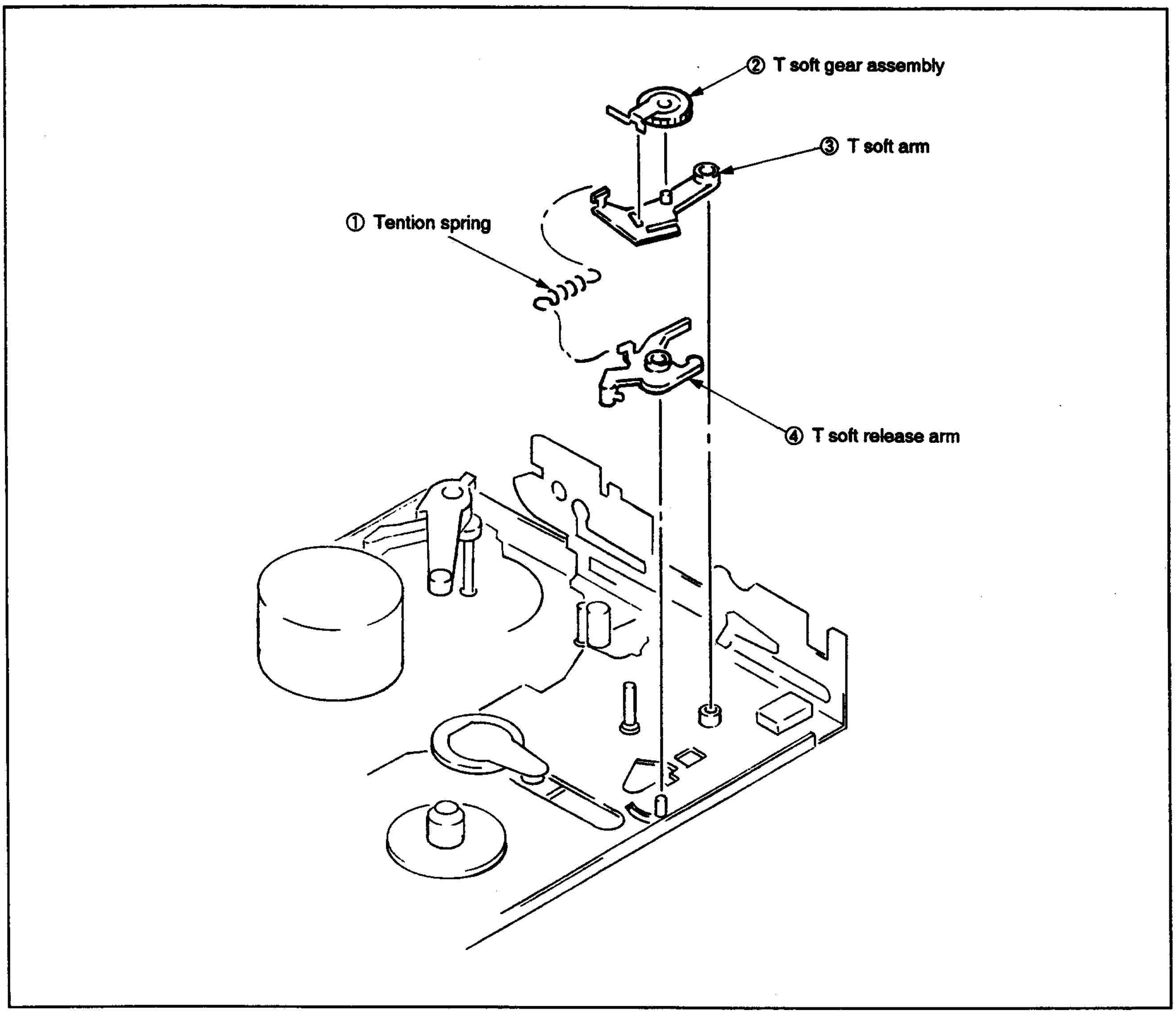


Fig. 9.

3-5. S RATCHET (See Fig. 10.)

1. Removing

1) Set the USE mode.
2) Refer to 1-1 and remove the cassette compartment holder assembly.
3) Refer to 3-1 and remove the retainer assembly.
4) Remove the lock washer ① and remove the tension coil spring ②.
5) Remove the S ratchet ③.

2. Attaching

1) Set the USE mode.
2) As shown in Fig. A, apply 1/4 of a drop of oil to the part on the shaft ④ indicated by the arrow.
3) Attach the S ratchet ③ to the shaft ④.
   Attach so that the tip goes belows the TG-1 arm.

Note: Make sure that the tension regulator spring does not change its shape when the S ratchet is moved under the TG-1 arm.

4) Hook the tension coil sprig ② onto the claw and secure with the lock washer ①.
5) Refer to 3-1 and attach the retainer assembly.
6) Refer to 1-1 and attach the cassette compartment holder assembly.

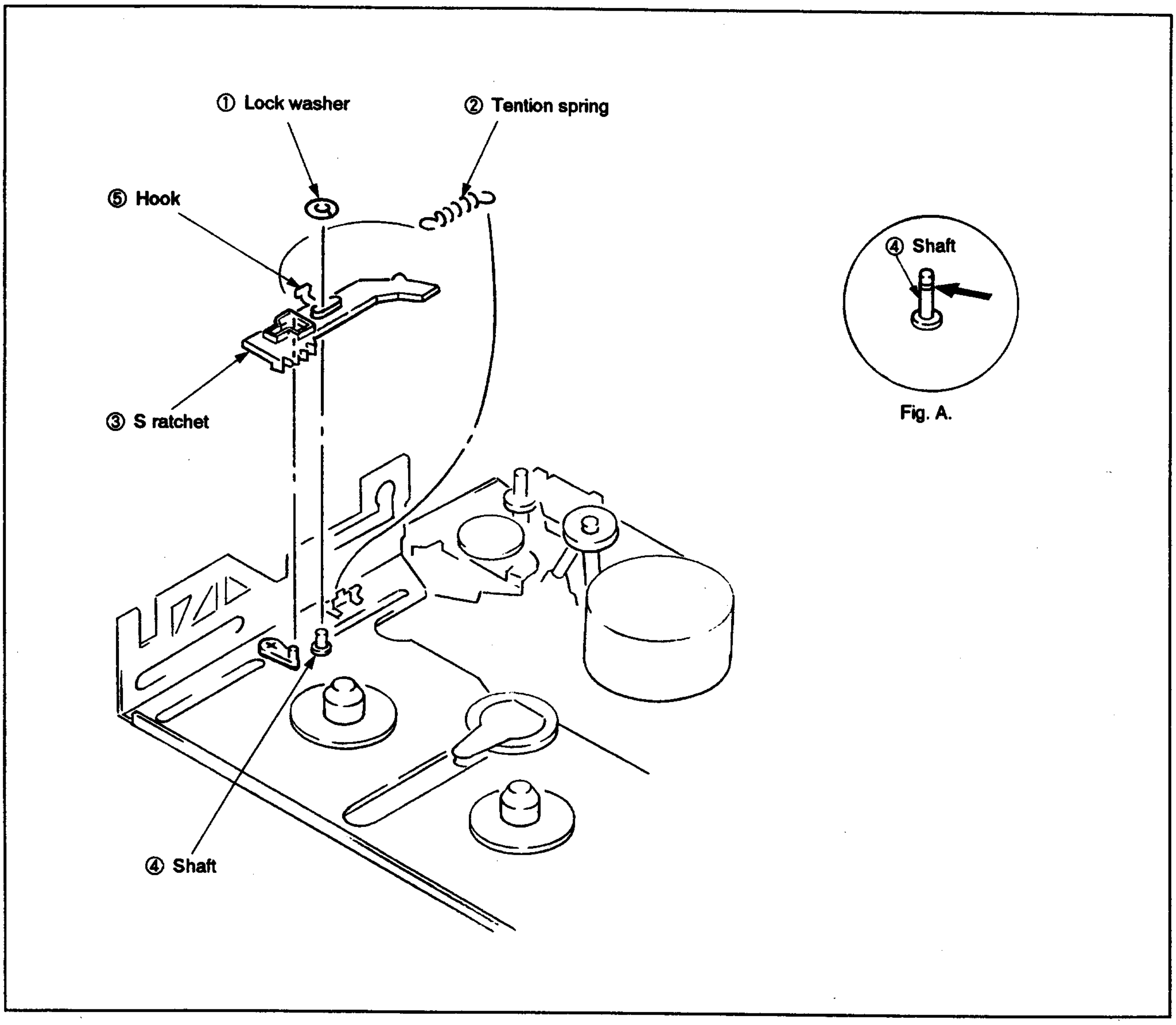


Fig. A.

Fig. 10.

3-6. LS CHASSIS ASSEMBLY

1. Removing (See Fig. 11.)

1) Set the USE mode.
2) Refer to 1-1 and remove the cassette compartment holder assembly.
3) Refer to 3-1 and remove the retainer assembly.
4) Remove the washer ① and remove the gooseneck gear assembly ②.
5) Set the DOCK mode.
6) Remove the flexible retainer ③ and remove the flexible board ④.
7) Rotate the four LS retainers in the direction of arrow 🅒 shown in Fig. B.
8) Remove the LS chassis assembly ⑤ in the direction of arrow 🅐.

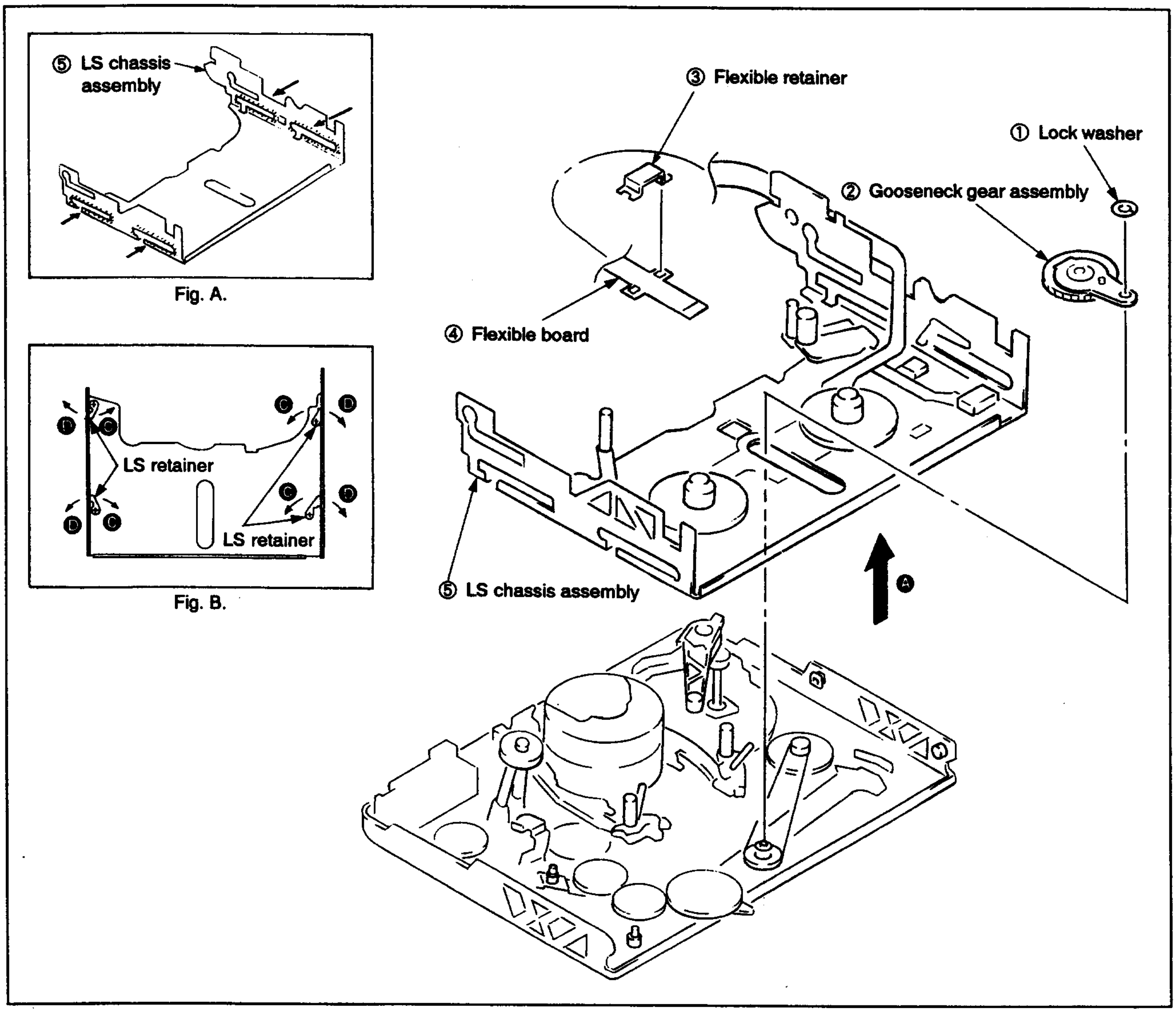

⑤ LS chassis assembly
LS retainer
LS retainer
🅒
🅓
③ Flexible retainer
① Lock washer
② Gooseneck gear assembly
④ Flexible board
⑤ LS chassis assembly
🅐

Fig. A.

Fig. B.

Fig. 11.

2. Attaching (See Fig. 11. to 18.)

1) As shown in Fig. A, apply grease (SG-941) to the punched side of the sheet metal of LS chassis assembly ⑤ indicated by the arrows.
2) Set the DOCK mode and start docking.
When docking the mechanism chassis and LS chassis assembly ⑤, always set the following.
3) Adjust the holes for the S arm assembly and T arm assembly to the holes for the mechanism chassis. (See Fig. 12.).

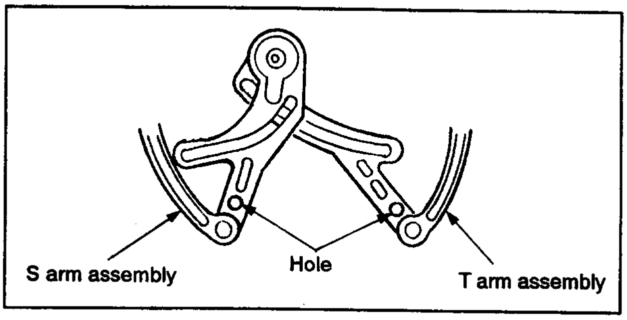

S arm assembly
Hole
T arm assembly

Fig. 12.

4) Move the TG-1 arm assembly in the arrow direction and insert the pin into the groove of the mechanism chassis. (See Fig. 13.).

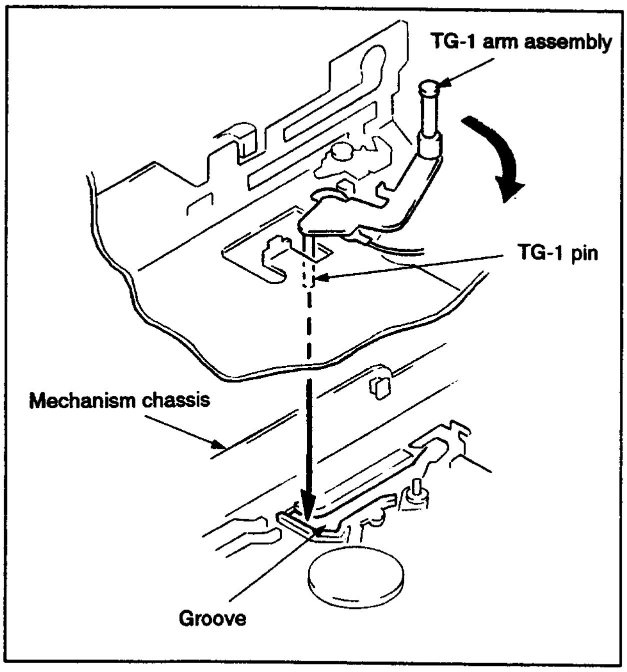

TG-1 arm assembly
TG-1 pin
Mechanism chassis
Groove

Fig. 13.

5) Move the T soft arm in the direction of the arrow and insert the pin of the T soft press arm (back side of LS chassis) into the right side of the cam of the mechanism chassis. (See Fig. 14.).

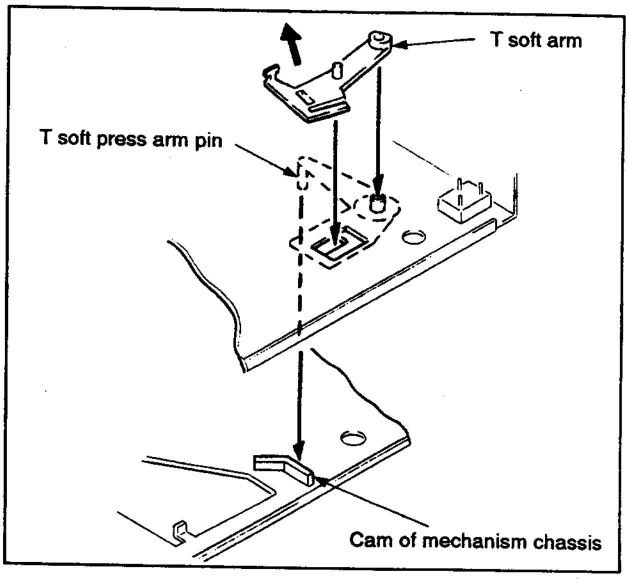

T soft arm
T soft press arm pin
Cam of mechanism chassis

Fig. 14.

6) Move the TG-9 arm assembly in the direction of the arrow and insert the pin into the groove of the mechanism chassis. (See Fig. 15.).

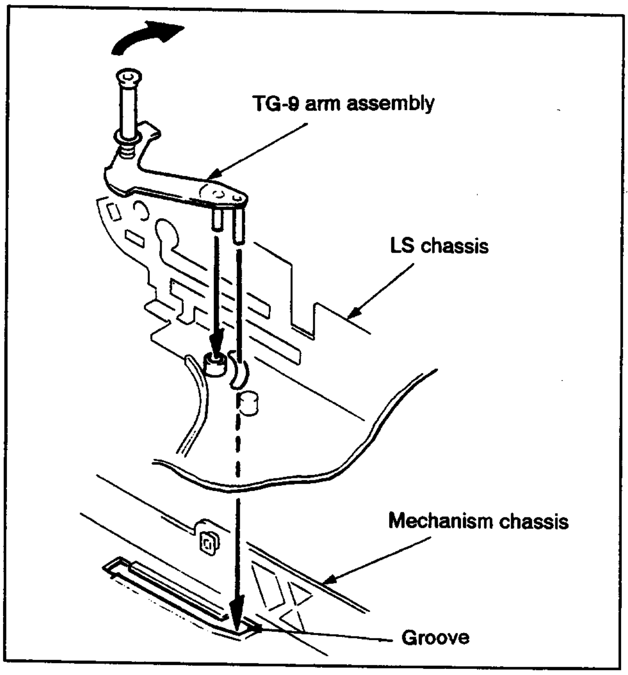

TG-9 arm assembly
LS chassis
Mechanism chassis
Groove

Fig. 15.

7) Move the pinch arm assembly in the direction of the arrow and insert the pin into the right side of the cam of the mechanism chassis. (See Fig. 16.).

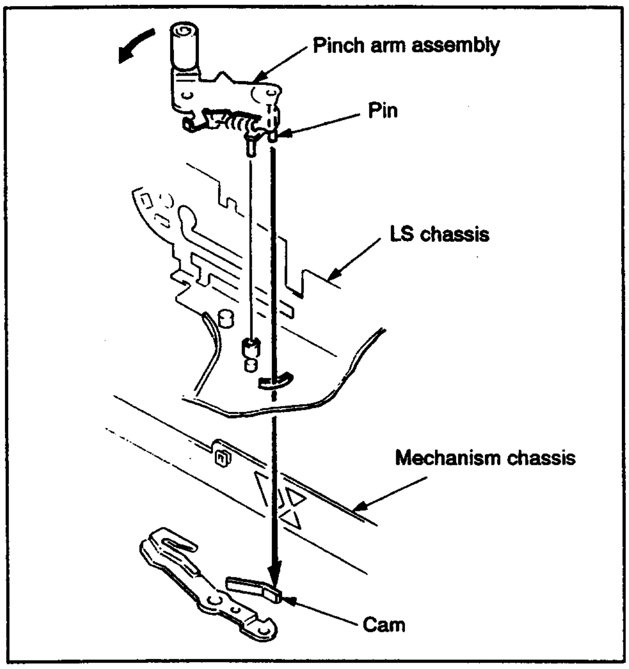

Pinch arm assembly
Pin
LS chassis
Mechanism chassis
Cam

Fig. 16.

8) While carrying out the above, adjust the guide shaft of the mechanism chassis to the notch of the LS chassis and insert it. (See Fig. 17.).

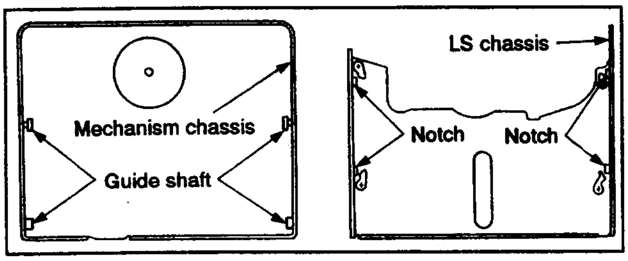

Mechanism chassis
Guide shaft
LS chassis
Notch
Notch

Fig. 17.

9) Rotate the four LS retainers in the ● direction shown in Fig. B.

10) Adjust the projection of the holder base to the holes of the FP-690 flexible board, and attach the flexible retainer. (See Fig. 18.).

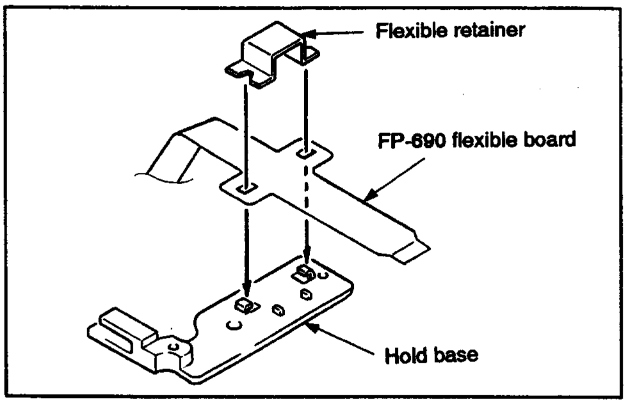

Flexible retainer
FP-690 flexible board
Hold base

Fig. 18.

11) Set the USE mode.

12) Attach the gooseneck gear assembly ② and tighten with the lock washer ①.

13) Refer to 3-1 and attach the retainer assembly.

14) Refer to 1-1 and attach the cassette compartment holder assembly.

Note: Using the mode selector II (Ref No. J-14), check that loading and unloading are carried out smoothly.

3-7. PINCH ARM ASSEMBLY (See Fig. 19.)

1. Removing

1) The cassette compartment holder assembly need not be removed for this procedure but set the LS chassis to the approximate center of the LS mortion.
(Refer to 1-1 and remove the cassette compartment holder assembly.)
2) Remove the tension coil spring ③.
3) Remove the screw (M1.4×2.5) ①.
4) Remove the TG-9 arm retainer ②.
5) Remove the pinch arm assembly ④.

2. Attaching

1) As shown in Fig. A, apply more than 1/3 but less than 1/2 of a drop of oil to the hole of the boss ⑤.
2) Insert the rotation center shaft of the pinch arm assembly ④ into the hole of the boss ⑤ and the pin ⑥ into the long hole.
3) Attach the TG-9 arm retainer ② and tighten the screw (M1.4×2.5) ①.
Note: If the TG-9 arm assembly is raised, lower it first before attaching.
4) Attach the tension coil spring ③.
5) Refer to 1-1 and attach the cassette compartment holder assembly.

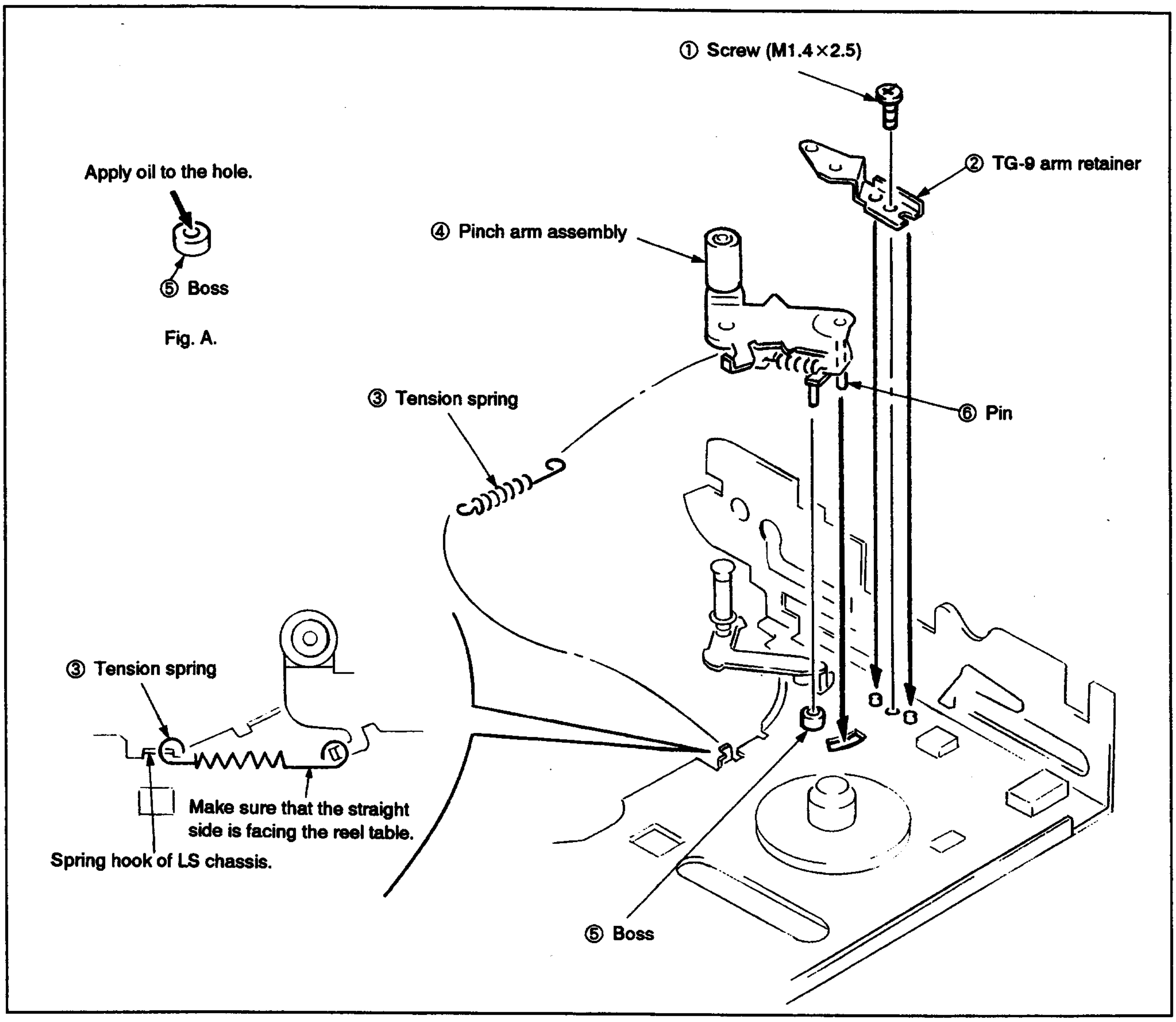

① Screw (M1.4×2.5)
② TG-9 arm retainer
Apply oil to the hole.
⑤ Boss
Fig. A.
④ Pinch arm assembly
③ Tension spring
⑥ Pin
③ Tension spring
Make sure that the straight side is facing the reel table.
Spring hook of LS chassis.
⑤ Boss

Fig. 19.

3-8. TG-9 ARM ASSEMBLY (See Fig. 20.)

1. Removing

1) The cassette compartment holder assembly need not be removed for this procedure but set the LS chassis to the approximate center of the LS mortion.
(Refer to 1-1 and remove the cassette compartment holder assembly.)
2) Refer to "3-7. PINCH ARM ASSEMBLY" and remove the TG-9 arm retainer.
3) Remove the TG-9 arm assembly ①.

2. Attaching

1) As shown in Fig. A, apply more than 1/3 but less than 1/2 of a drop of oil to the hole of the boss ⑤.
2) As shown in Fig. B, place the longer arm of the torsion coil spring ② so that it comes to the outside (bent side of the LS chassis) of the pinch arm boss ③.
Next, hook the shorter arm (round side) of the torsion coil-spring ② to the pin ④ of the TG-9 arm assembly ①, rotate it in the direction of the arrow. Insert the pin ④ of the TG-9 arm assembly ① into the hole of the LS chassis as shown in Fig. B.
3) Refer to "3-7. PINCH ARM ASSEMBLY" and attach the TG-9 arm retainer.

Note: If the pinch arm assembly is raised, lower it first before attaching.

4) Refer to 1-1 and attach the cassette compartment holder assembly.

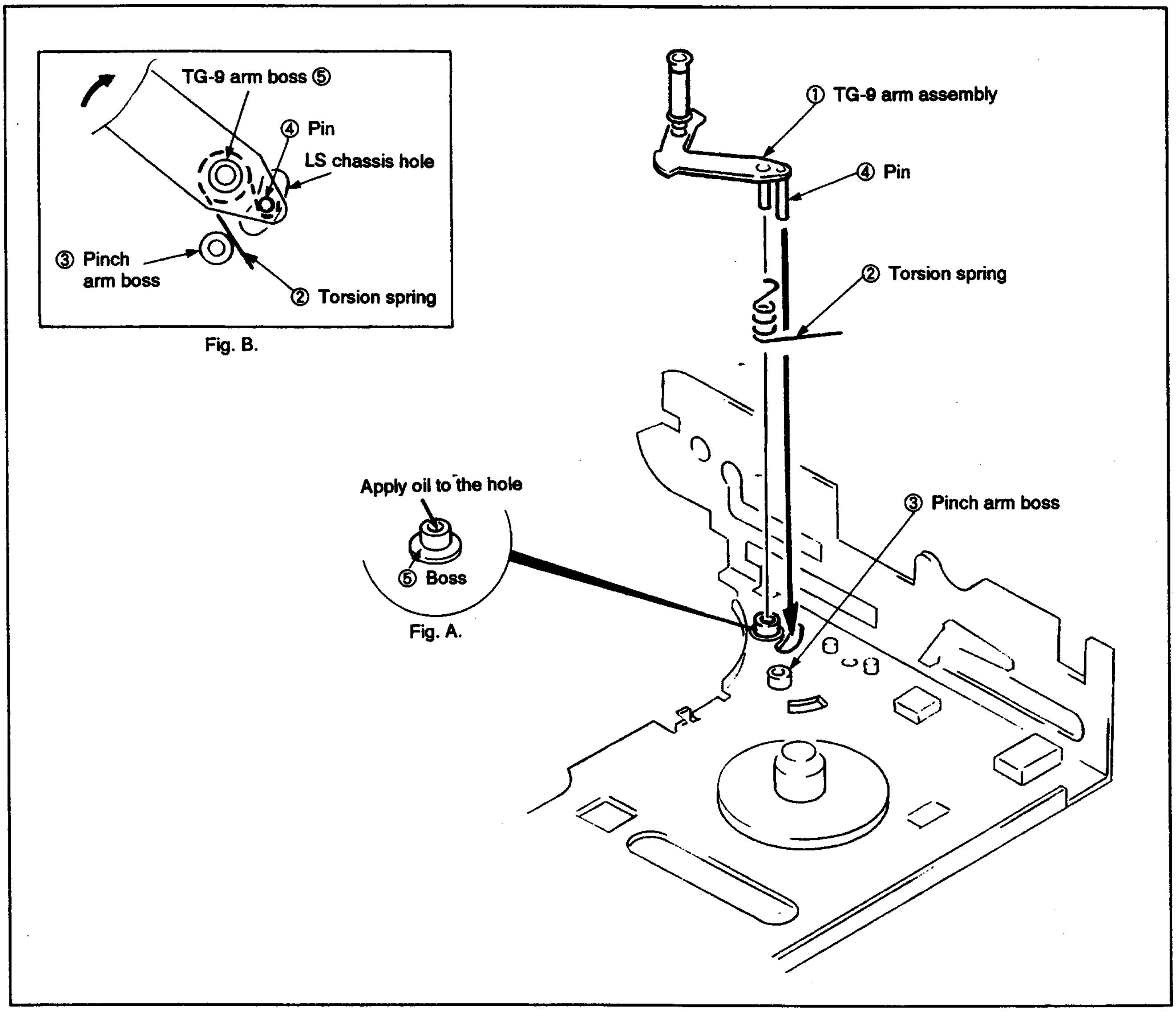

TG-9 arm boss ⑤
④ Pin
LS chassis hole
③ Pinch arm boss
② Torsion spring
① TG-9 arm assembly
④ Pin
② Torsion spring
③ Pinch arm boss
Apply oil to the hole
⑤ Boss

Fig. B.

Fig. A.

Fig. 20.

3-9. TG-1 ARM ASSEMBLY (See Fig. 21.)

1. Removing

1) Refer to 1-1 and remove the cassette compartment holder assembly.
2) Refer to 3-6 and remove the LS chassis assembly.
3) Refer to "3-2. S REEL TABLE ASSEMBLY" and remove the adjusting block and the string from the groove of the S reel table.

Note: Attach and remove the string because its shape changes easily.

4) Remove the tension coil spring ①.
5) Rotate the TG-1 arm assembly ② until the position shown in the Fig. B and pull it put upwards.

2. Attaching

1) As shown in Fig. A, apply more than 1/3 but less than 1/2 of a drop of oil to the hole of the boss ③.
2) Insert the TG-1 shaft ④ into the LS chassis boss ③ at the position shown in the Fig. B and rotate it in the Ⓑ direction as shown in the Fig. B.
3) Attach the tension coil spring ①.
4) Refer to the "3-2. S REEL TABLE ASSEMBLY" and insert the string into the groove of the S reel table and attach the adjusting block and LS chassis.
5) Refer to 3-6 and attach the LS chassis assembly.
6) Refer to 1-1 and attach the cassette compartment holder assembly.

Note: Refer to 3-21 and carry out the tension regulator position adjustment.

Note: Refer to 3-22 and carry out the FWD back tension adjustment.

Note: Do not touch the tape guides and strings.

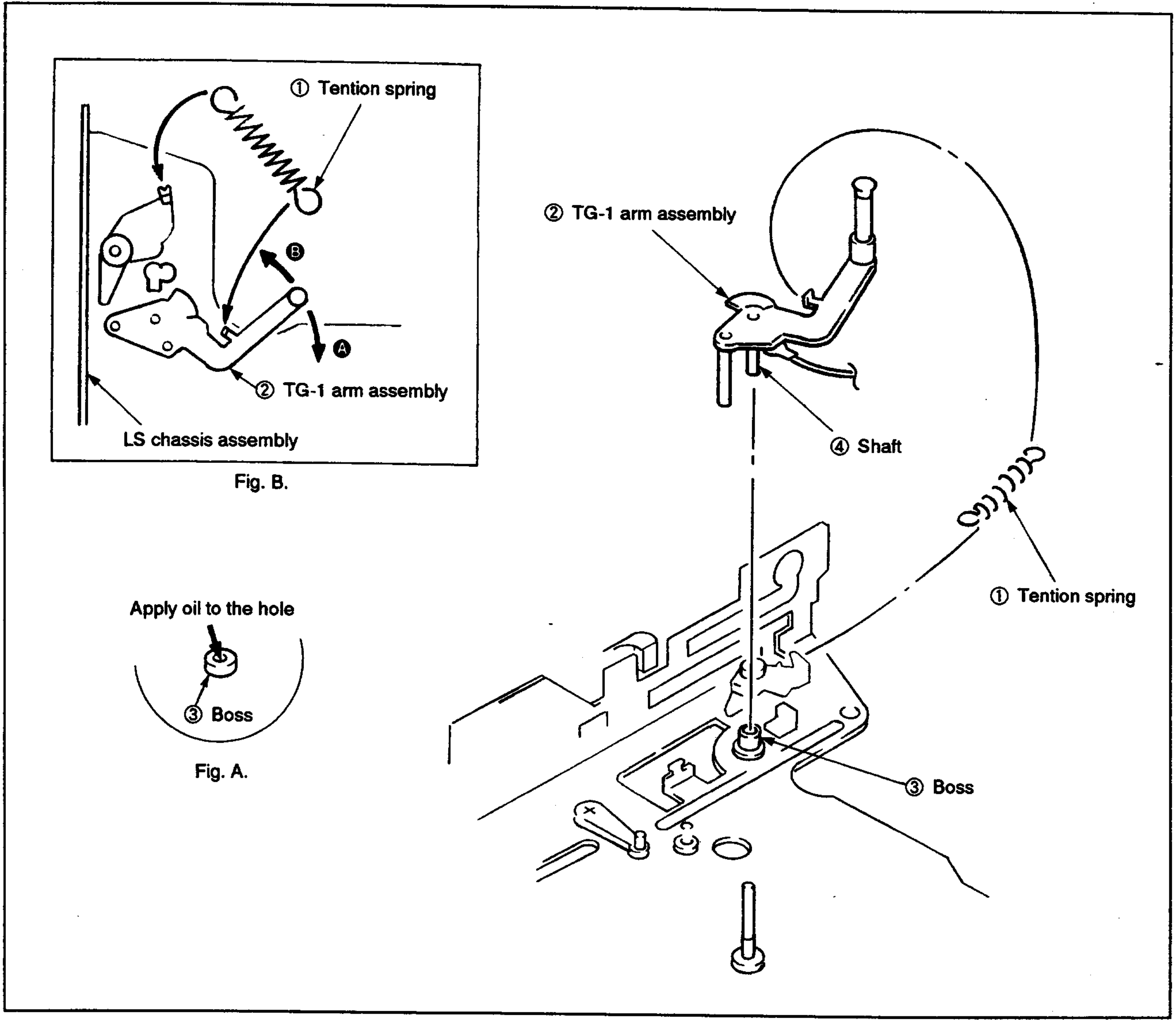


Fig. B.

Fig. A.

Fig. 21.

3-10. T RATCHET (See Fig. 22.)

1. Removing

1) Refer to 3-3. and remove the T reel table assembly.
2) Pull out the T ratchet ① from the boss.

2. Attaching

1) Attach the T ratchet ① so that it goes below the LS chassis and insert the pin between the forks of the T ratchet release arm ② . Insert the LS chassis boss into the hole of the rotation center.
2) Refer to 3-3. and attach the T reel table, retainer assembly, and cassette compartment holder assembly.

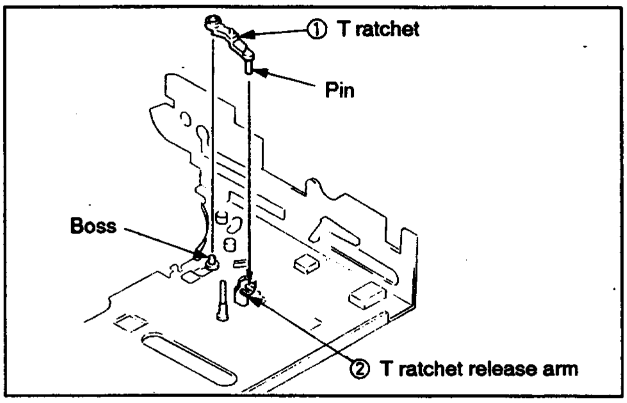

① T ratchet
Pin
Boss
② T ratchet release arm

Fig. 22.

3-11. COASTER S ASSEMBLY, COASTER T ASSEMBLY, S RAIL, T RAIL, S ARM ASSEMBLY, T ARM ASSEMBLY

1. Removing (See Fig. 23. to 26.)

1) Refer to 3-6. and remove the LS chassis assembly.
2) Remove the coaster (S) and (T) assemblies from the rail. (Fig. 23.)

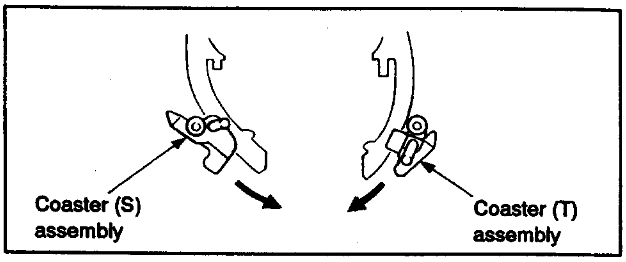

Coaster (S) assembly
Coaster (T) assembly

Fig. 23.

3) While holding the coaster (S) and (T) assemblies, rotate it in the arrow direction and remove the coaster (S) and (T) assemblies. (Fig. 24.)

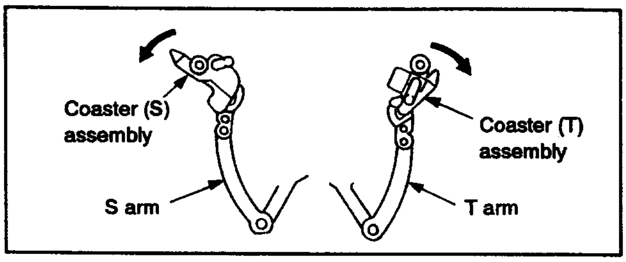

Coaster (S) assembly
Coaster (T) assembly
S arm
T arm

Fig. 24.

4) Remove one screw of the S and T rails, rotate them in the direction of the arrow. The snap fitting will come off. (Fig. 25.)

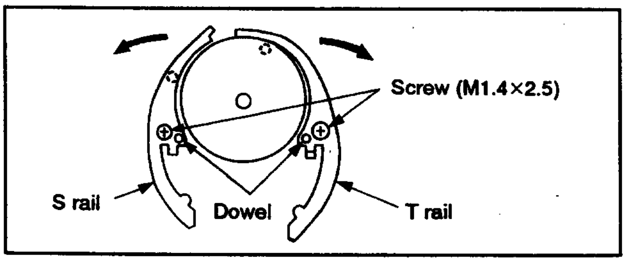

Screw (M1.4×2.5)
S rail
Dowel
T rail

Fig. 25.

5) Remove the washer and remove the T and S arm assemblies. (Fig. 26.)

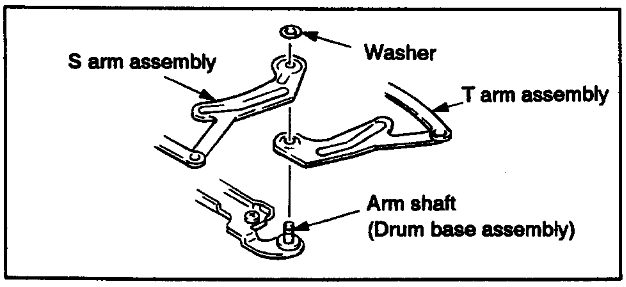

S arm assembly
Washer
T arm assembly
Arm shaft
(Drum base assembly)

Fig. 26.

2. Attaching (See Fig. 25. to 29.)

1) Insert the T arm assembly and then the S arm assembly into the arm shaft of the drum base assembly and tighten the washer. (Fig. 26.)
2) Refer to Fig. 25. and adjust the dowel of drum base assembly to the hole of the rail and rotate in the opposite direction of removal and attach it by snap fitting as shown in the Fig. 27.

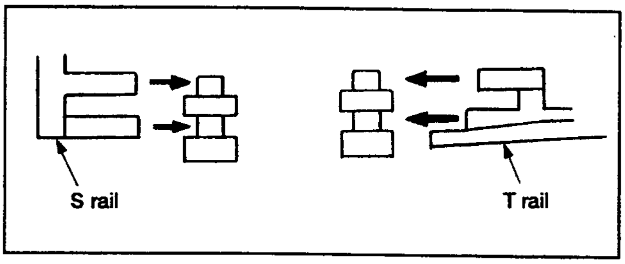

S rail
T rail

Fig. 27.

3) Adjust the coaster shaft to the hole of the S and T arm assemblies and insert them, and rotate it slightly so that they wait come off. (Fig. 28.)

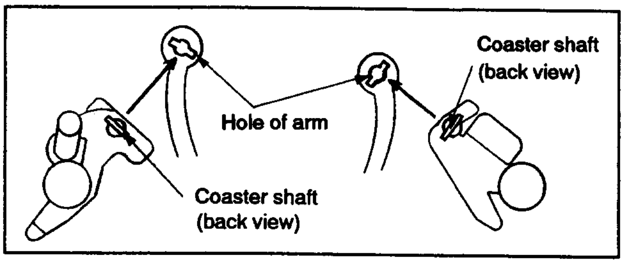

Coaster shaft (back view)
Hole of arm
Coaster shaft (back view)

Fig. 28.

4) Insert the coaster (S) and (T) assemblies into the rail. (Fig. 29.)

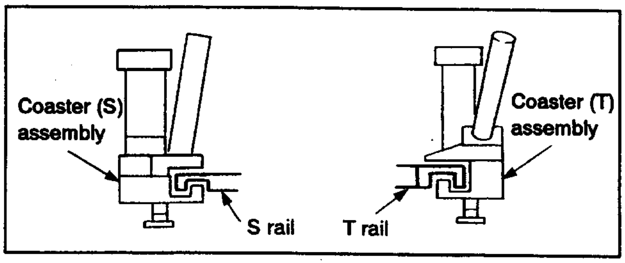

Coaster (S) assembly
S rail
T rail
Coaster (T) assembly

Fig. 29.

5) Refer to 3-6. and attach the LS chassis assembly.

3-12. PINCH RELEASE ARM ASSEMBLY (See Fig. 30.)

1. Removing

1) Refer to 1-1 and remove the cassette compartment holder assembly.
2) Refer to 3-6 and remove the LS chassis assembly.
3) Remove the lock washers ① and remove the pinch release arm assembly ②.

2. Attaching

1) Apply 1/2 of a drop of grease (Kantokasei furoiru SG-941) to the hole of the M slider ③ and the pinch release arm shaft ④ of the mechanism chassis assembly. (Fig. A, B)
2) Adjust the torsion coil spring hook to the inside of the outsert cam ⑤ of the mechanism chassis assembly and insert the boss of the pinch release arm ② into the pinch release arm shaft slightly. Then rotate the pinch release arm assembly ② in the counterclockwise direction and while loosening the torsion coil spring, push it down until the pin of the pinch release arm ② goes into the hole of the M slider ③.
3) Attach the lock washer ①.
   Note: Lock washer ① be sure that is inserted completely into the groove of the shaft.
4) Refer to 3-6 and attach the LS chassis assembly.
5) Refer to 1-1 and attach the cassette compartment holder assembly.

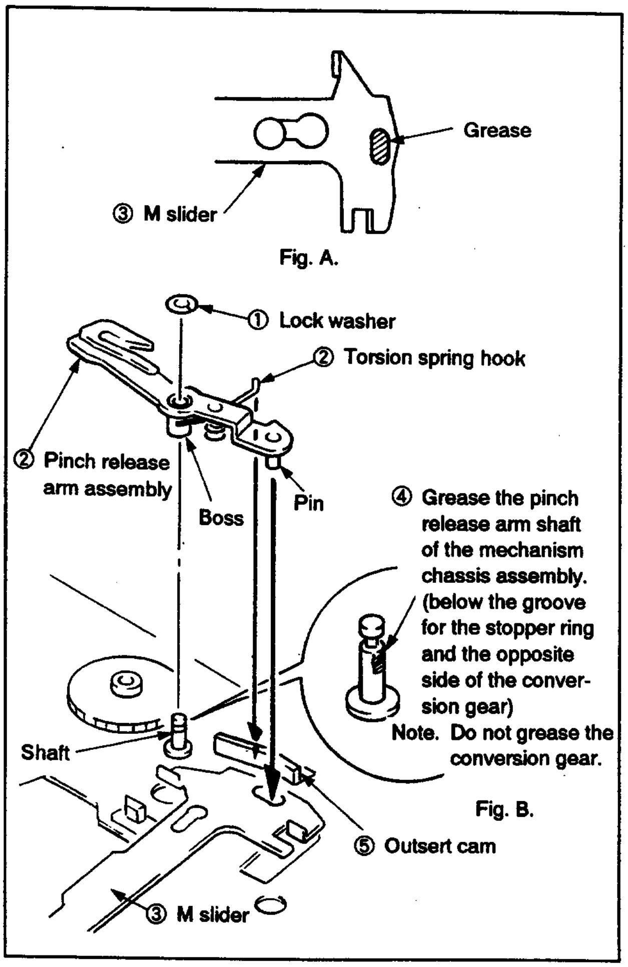

Grease
③ M slider
Fig. A.
① Lock washer
② Torsion spring hook
② Pinch release arm assembly
Boss
Pin
④ Grease the pinch release arm shaft of the mechanism chassis assembly. (below the groove for the stopper ring and the opposite side of the conversion gear)
Note. Do not grease the conversion gear.
Shaft
Fig. B.
⑤ Outsert cam
③ M slider

Fig. 30.

3-13. M SLIDER (See Fig. 31.)

1. Removing

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-6, remove the LS chassis assembly.
3) Remove the screw ⑩.
4) Remove the gear retainer ①.
5) Remove gear D ②.
6) Remove the E ring ⑪.
7) Remove the LS gear ③.
8) Remove the relay pulley ⑤ and relay belt ⑥.
9) Remove the two washers ⑫ and ⑬.
10) Remove the EJ arm ⑦.
11) Remove the pinch release arm assembly ⑨.
12) Remove the M slider ④.

2. Attaching

1) Insert the M slider ④ into the two shafts and adjust the positioning hole 🅒.

Note: Grease the three parts (shown in Fig. A) of the M slider.

2) Insert the pinch release arm assembly ⑨ into the shaft.

Note: The pinch release arm pin should be in the hole of the M slider as shown in Fig. A.

3) Insert the EJ arm ⑦ into the shaft.

Note: The EJ arm pin should be in the notch of the M slider as shown in Fig. A.

4) Attach the two washers ⑫ and ⑬.
5) Attach the relay pulley ⑤ and relay belt ⑥.

Note: Hook the relay belt ⑥ between the relay pulley ⑤ and conversion gear ⑧.

6) Attach the LS gear ③ (adjust the positioning hole 🅑)
7) Attach the E ring ⑪.
8) Attach gear D ②.
9) Check that the positioning holes 🅐, 🅑, 🅒 are at the correct positions.
10) Attach the gear retainer ①.
11) Fix the screw ⑩.
12) Refer to 3-6 and attach the LS chassis assembly.
13) Refer to 1-1 and attach the cassette compartment holder assembly.

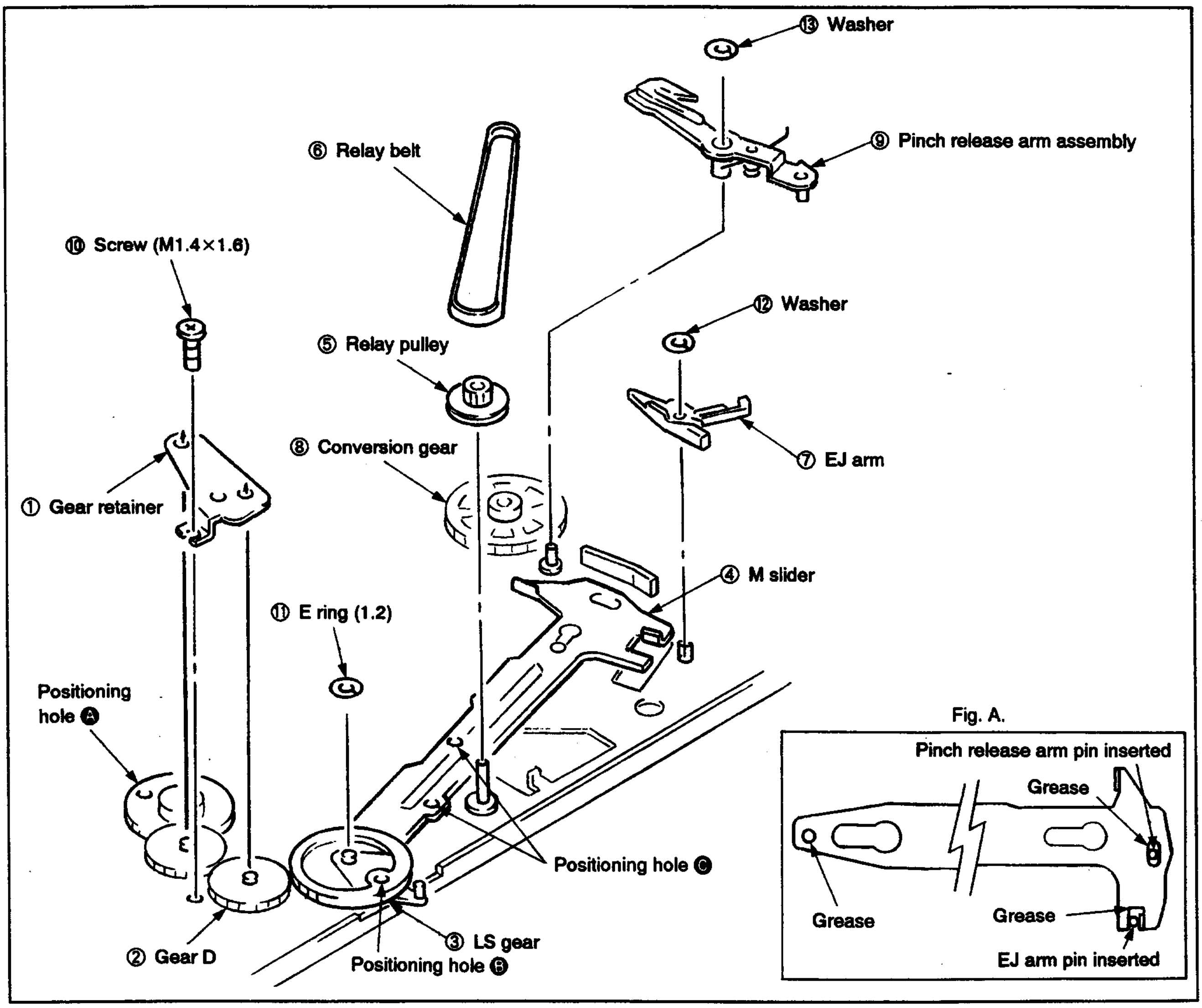

⑬ Washer
⑨ Pinch release arm assembly
⑥ Relay belt
⑩ Screw (M1.4×1.6)
⑫ Washer
⑤ Relay pulley
⑦ EJ arm
⑧ Conversion gear
① Gear retainer
④ M slider
⑪ E ring (1.2)
Positioning hole 🅐
Fig. A.
Pinch release arm pin inserted
Grease
Grease
Grease
EJ arm pin inserted
Positioning hole 🅒
② Gear D
③ LS gear
Positioning hole 🅑

Fig. 31.

3-14. LOADING MOTOR ASSEMBLY, TG-3 ASSEMBLY (See Fig. 32.)

1. Removing

1) Refer to 1-1 and remove the cassette compartment holder assembly.
2) Unskate the LS chassis slightly.
3) Remove the two screws ①.
4) Remove the loading motor assembly ②.
5) Remove the two screws ③ and remove the TG-3 base assembly ④.

2. Attaching

1) Adjust the hole of TG-3 base assembly ④ to the boss of the mechanism chassis, and tighten the two screws ③ with a 0.7 kg • cm tightening torque.
2) Attach the loading motor assembly ②.
3) Fix the two screws ①.
4) Refer to 1-1 and attach the cassette compartment holder assembly.

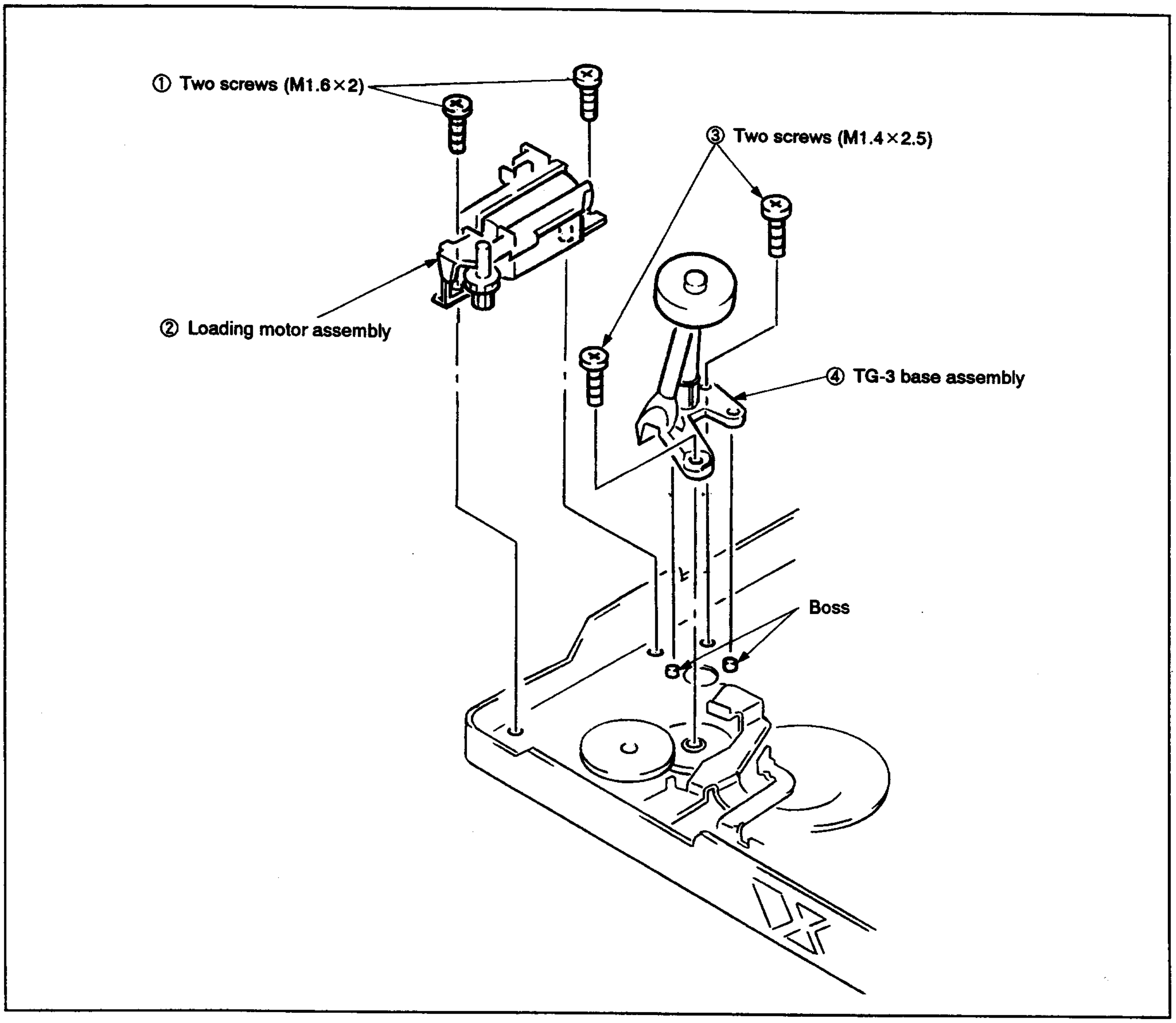

① Two screws (M1.6×2)
③ Two screws (M1.4×2.5)
② Loading motor assembly
④ TG-3 base assembly
Boss

Fig. 32.

3-15. CAPSTAN MOTOR ASSEMBLY (See Fig. 33.)

1. Removing

1) Refer to 1-1 and remove the cassette compartment holder assembly. (It need not be removed when working in the EJECT mode because it will be lifted up in this mode.)
2) Refer to 1-2. and remove the HP arm block assembly.
3) Set the LS chassis from USE to EJECT.
4) Disconnect the flexible cable ③ from the connector ② of the capstan motor assembly ①. (Fig. A.)
5) Remove the two screws ④ and the hexagonal nut ⑤.

Note: Before removing the hexagonal nut ⑤, mark it and the mechanism chassis as shown in Fig. C. (To attach the capstan motor assembly ① at approximately the same height as before it was removed, when attaching the hexagonal nut ⑤.)

6) Lift up the capstan motor assembly ① vertically and remove it.

2. Attaching

1) Adjust so that the gear of the conversion gear assembly ⑥ and the gear of the capstan motor assembly ① engage. Then insert CM guide shaft A ⑦ into the hole of the capstan motor assembly ①.
   Be careful not to scratch the gears. (Fig. B.)
2) Tighten the two screws ④ with a 0.7 kgf • cm tightening torque.
3) Screw the hexagonal nut ⑤ onto CM guide shaft A ⑦ until the third ring of the shaft is above it, and adjust the mark on the nut to that on the mechanism chassis.
4) After attaching the two screws ④ and hexagonal nut ⑤, check that the capstan motor assembly ① is attached parallel to the bottom of the mechanism chassis.
5) Insert the capstan flexible board ③ into the connector ②. Push the reinforce plate ⑧ directly. (Fig. A.)

Note: After attaching, attach each board, load the tape, and carry out the CUE and REV checks. Check that the tape does not become slack while running.

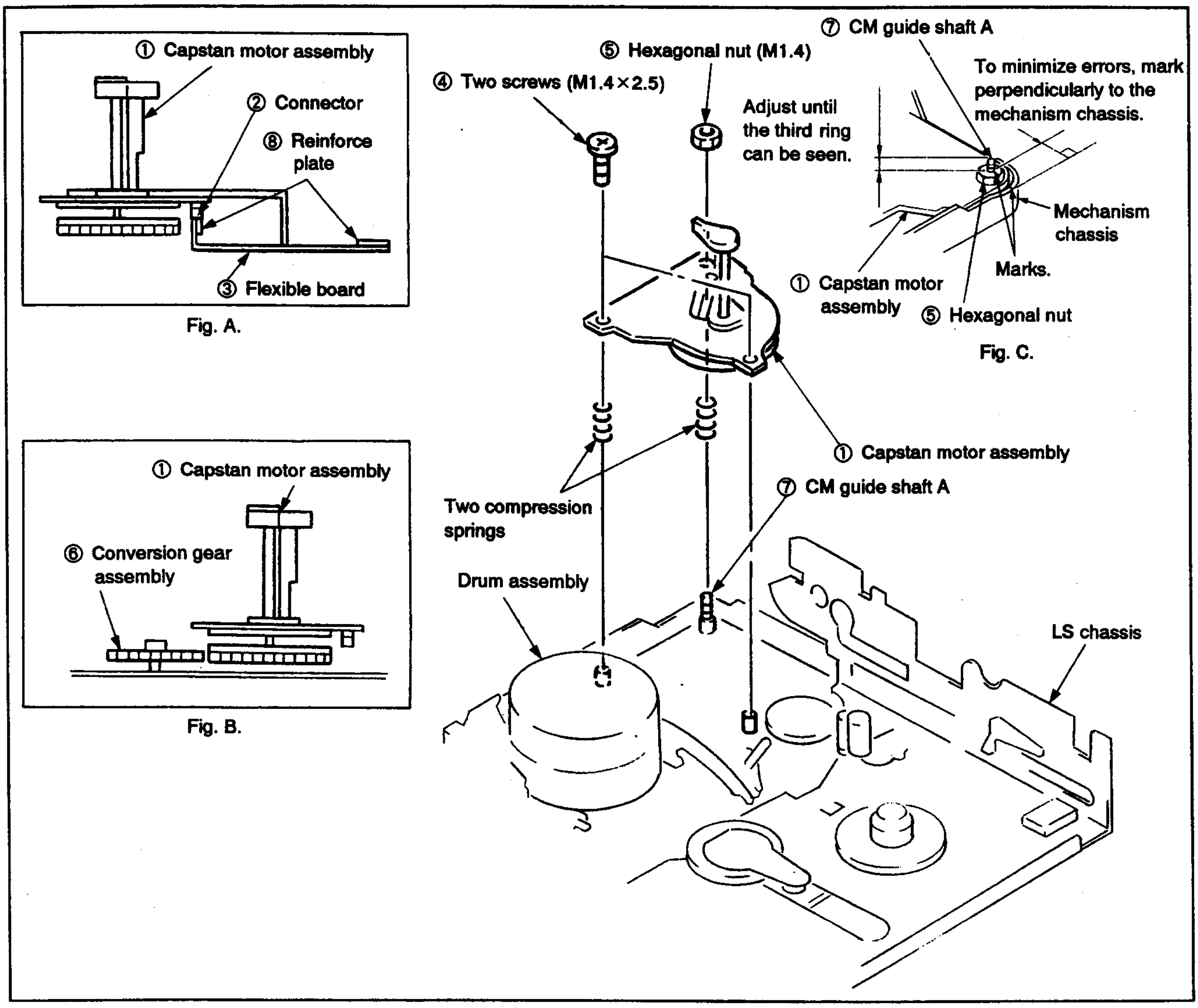

① Capstan motor assembly
② Connector
⑧ Reinforce plate
③ Flexible board
① Capstan motor assembly
⑥ Conversion gear assembly
⑦ CM guide shaft A
⑤ Hexagonal nut (M1.4)
④ Two screws (M1.4×2.5)
Adjust until the third ring can be seen.
To minimize errors, mark perpendicularly to the mechanism chassis.
Mechanism chassis
Marks.
① Capstan motor assembly
⑤ Hexagonal nut
① Capstan motor assembly
⑦ CM guide shaft A
Two compression springs
Drum assembly
LS chassis

Fig. A.

Fig. B.

Fig. C.

Fig. 33.

3-16. DRUM BASE ASSEMBLY (See Fig. 34.)

1. Removing

1) Refer to 3-6 and remove the LS chassis assembly.
2) Refer to 1-2. and remove the HP arm block assembly.
3) Remove the motor flexible board ① from the PC board.
4) Remove the three screws ②.
5) Pull out the head flexible board ③ from the hole of the mechanism chassis carefully to avoid scratching it. Then remove the drum base assembly ④.

2. Attaching

1) Insert the head flexible board ③ into the hole of the mechanism chassis and adjust the two positioning holes ⑤ of the drum base assembly ④ to the two dowels of the mechanism chassis.
2) Tighten the three screws ② with a 0.7 kgf • cm tightening torque.
3) Attach the motor flexible board ① to the PC board.
4) Refer to 1-2. and attach the HP arm block assembly.
5) Refer to 3-6 and attach the LS chassis assembly.

Note: After attaching, carry out "4. TAPE PATH ADJUSTMENT".

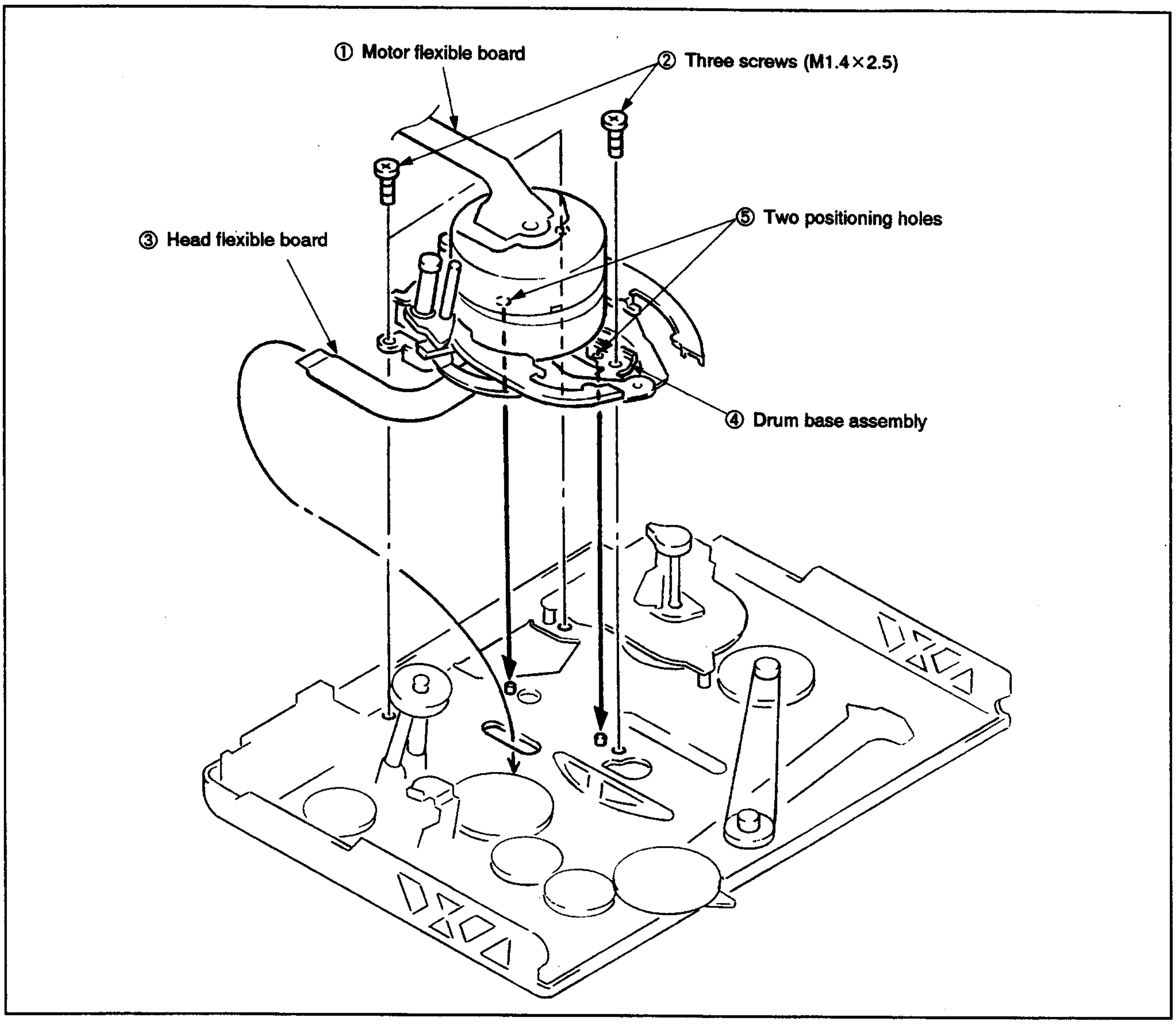

① Motor flexible board
② Three screws (M1.4×2.5)
③ Head flexible board
⑤ Two positioning holes
④ Drum base assembly

Fig. 34.

3-17. DRUM ASSEMBLY (See Fig. 35.)

1. Removing

1) Unload until the USE mode is set.
2) Refer to 1-2. and remove the HP arm block assembly.
3) Remove the motor flexible board ① from the PC board.
4) Remove one fitting screw assembly ② from the back of the mechanism chassis.
5) Pull out the head flexible board ③ from the hole of the mechanism chassis and drum base assembly carefully to avoid scratching it. Then remove the drum assembly ④.

2. Attaching

1) Insert the head flexible board ③ into the hole of the mechanism chassis. Then as specified in Fig. A, adjust pin ⓑ to hole ⓐ and pin ⓓ to hole ⓒ.
2) Tighten the fitting screw assembly ② at 0.5 kg • cm.
3) Attach the motor flexible board ① to the PC board.
4) Refer to 1-2. and attach the HP arm block assembly.

Note: After attaching, carry out "4. TAPE PATH ADJUSTMENT".

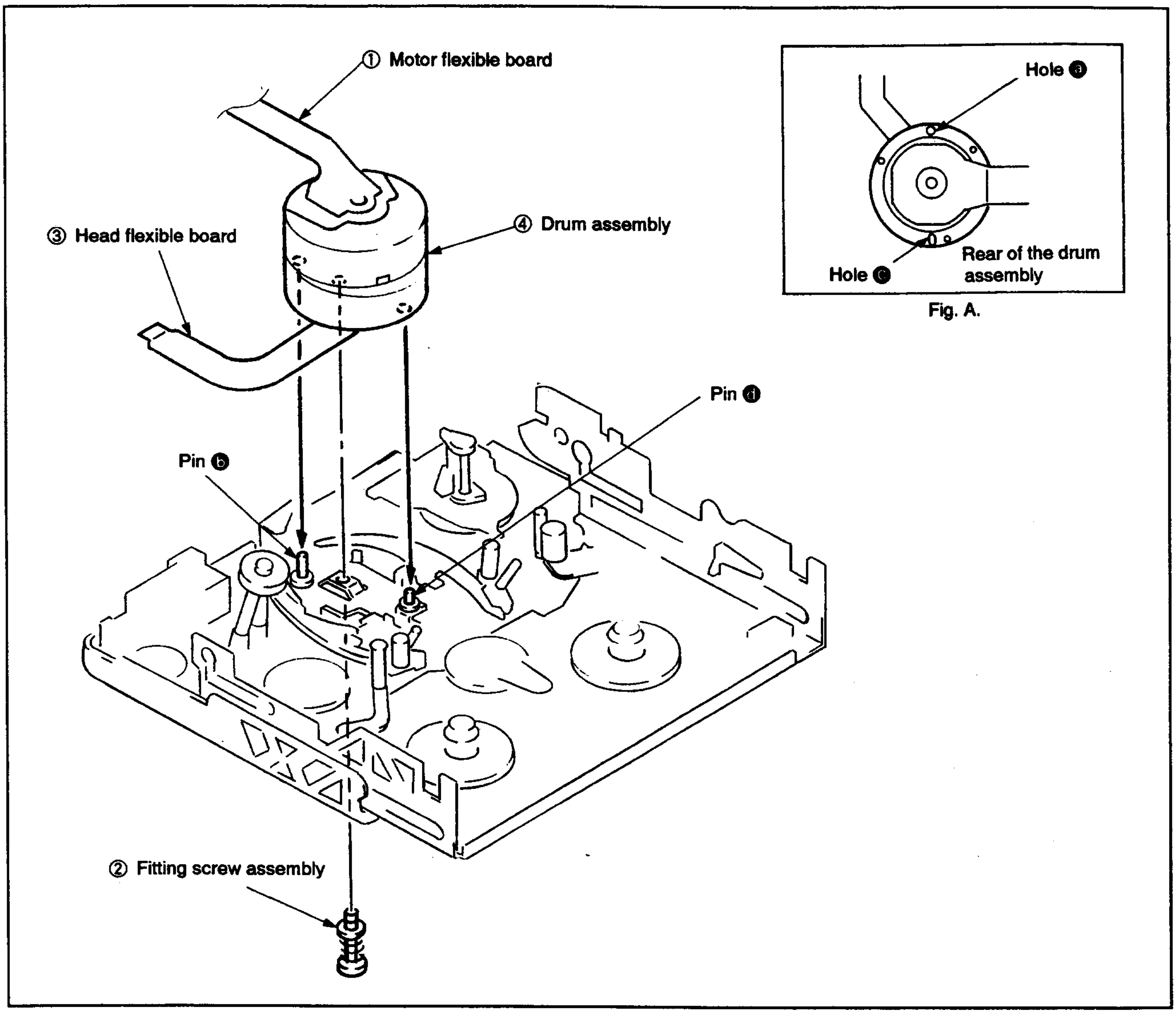

① Motor flexible board
③ Head flexible board
④ Drum assembly
Pin ⓓ
Pin ⓑ
② Fitting screw assembly
Hole ⓐ
Rear of the drum assembly
Hole ⓒ

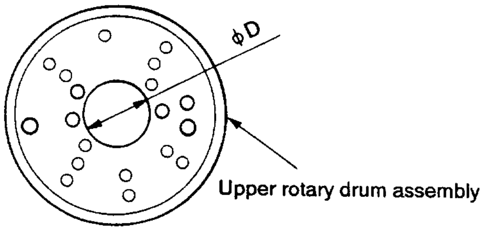
Fig. A.

Fig. 35.

3-18. REPLACEMENT OF UPPER ROTARY DRUM ASSEMBLY (See Fig. 36. and 37.)

- There are two types of upper rotary drum assembly depending on the color mark. (See Fig. A in Fig. 37.)

A-7049-536-A	Upper rotary drum assembly DGR-76-R-(1)
A-7049-534-A	Upper rotary drum assembly DGR-76-R-(2)



Upper drums for manufacturing

RANK	ϕ D	RARK	
A	$\phi\,8^{+0.0015}_{+0.001}$	Green	-01
B	$\phi\,8^{+0.001}_{+0.0005}$	Green, Red	
C	$\phi\,8^{+0.0005}_{0}$	Black	
D	$\phi\,8^{0}_{-0.0005}$	Black, Red	
E	$\phi\,8^{-0.0005}_{-0.001}$	Red	-11
F	$\phi\,8^{-0.001}_{-0.0015}$	Red, Red	
G	$\phi\,8^{-0.0015}_{-0.002}$	Blue	
H	$\phi\,8^{-0.002}_{-0.0025}$	Blue, Red	

➡

Upper drum for repairing

SUFFIX	ϕ D measurement	REMARKS	DRUM
-01	$\phi\,8^{+0.001}_{+0.0005}$	Green, Red	DGR-76-R-(1)
	$\phi\,8^{+0.0005}_{0}$	Black	
-11	$\phi\,8^{-0.001}_{-0.0015}$	Red, Red	DGR-76-R-(2)
	$\phi\,8^{-0.0015}_{-0.002}$	Blue	

1. Removing

1) Refer to 3-17 and remove the drum assembly.
2) Remove the two screws ①. (See Fig. 36.)
3) Hold the exit (base) of the guide protector ② and lift it up diagonally. In this state, hold the circumference of the stator assembly ③ and remove it. (See Fig. 36.)

Note: The flexible board and guide protector ② are only glued in place and therefore come off easily.

4) As shown in Fig. A, hook the rotor earth spring ④ onto the spring hook. (See Fig. 36.)
5) Using a drum screwdriver (Ref No. J-11), remove the two hexagonal socket bolts ⑤ , and remove the rotary upper drum assembly ⑥. (See Fig. 37.)
6) Using the drum screwdriver (Ref No. J-11), remove the two hexagonal socket bolts ⑦, and remove the rotor assembly ⑧ . (See Fig. A in Fig. 37.)

2. Attaching

1) Clean the flange surface ⑩ and the surface of the rotary upper drum assembly ⑥ that will come in contact with it, and check that there are no dusts, scratches, etc. (See Fig. 37.)
2) Adjust the direction of the upper drum so that the head contact mold pin ⑪ fits the reference hole of the rotary upper drum assembly ⑥ and press in lightly. (See Fig. 37.)

Note: Look at the space between the upper drum and lower drum and check that it is about 0.05 mm.

3) Using a drum screwdriver (Ref No. J-11), tighten the two hexagonal socket bolts ⑤ (800 g • cm), and rotate the drum with your fingers and make sure that there are no problems. (See Fig. 37.)
4) Adjust pin ⑨ of the rotor assembly ⑧ to the hole of the rotary upper drum assembly ⑥ . Using a drum screwdriver (Ref No. J-11), tighten the two hexagonal socket bolts ⑦ (800 g • cm). (See Fig. A in Fig. 37.)
5) Remove the rotor earth spring ④ from the spring hook. Using a pair of tweezers, etc., hook it onto the groove of the stator boss ⑫. (See Fig. B in Fig. 37.)

Note: Make sure that the rotor earth spring ④ does not go between the flange and stator.

6) Hold the circumference of the stator assembly ③, place it on the inner step of the upper drum and insert the other side slowly. (See Fig. B in Fig. 36.)
7) Tighten the two screws ①. (500 g • cm). (See Fig. 36.)
8) Rotate the upper drum with your fingers and check that it rotates smoothly.
9) Refer to 3-17 and attach the drum assembly.

Note: After attaching, carry out “4. TAPE PATH ADJUSTMENT”.

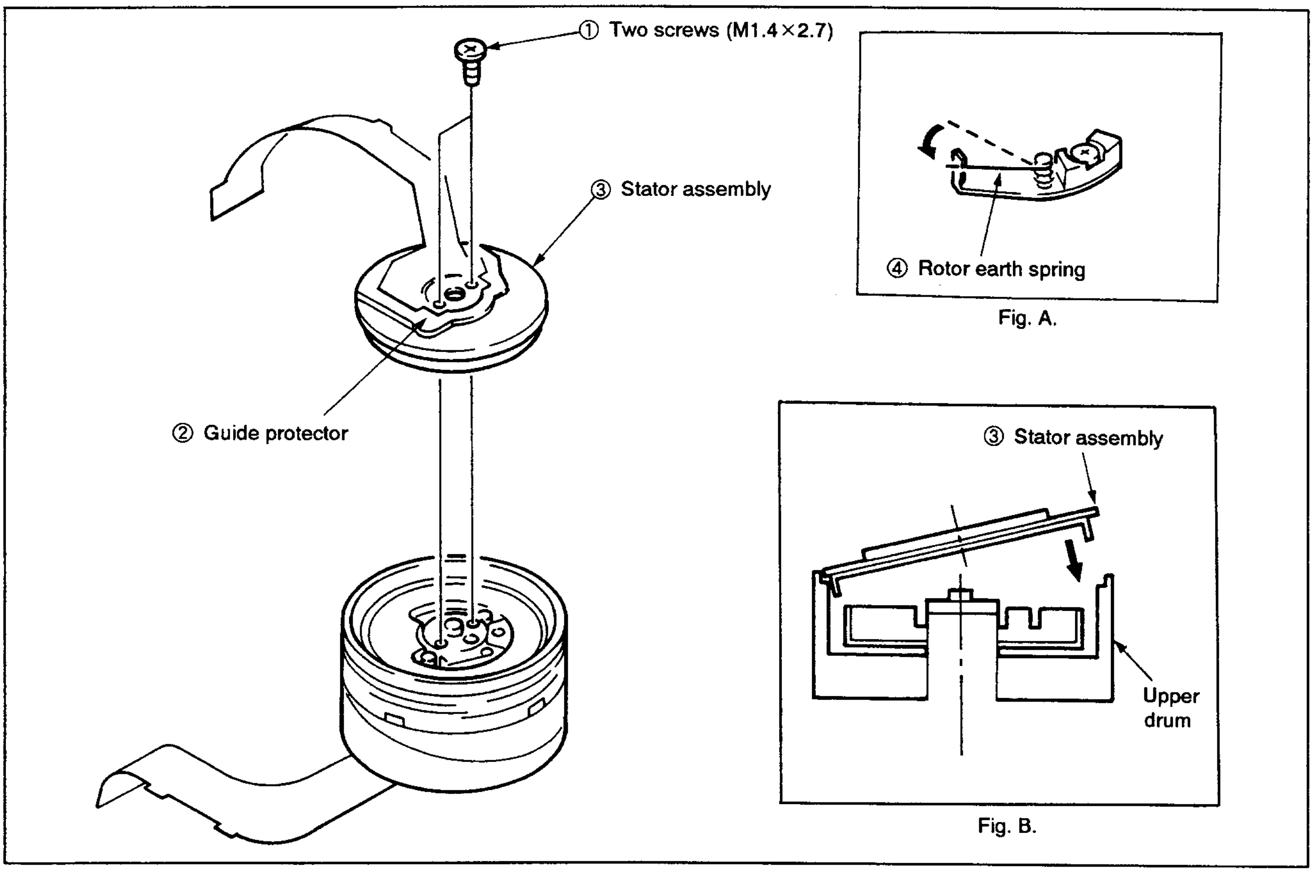

① Two screws (M1.4×2.7)
③ Stator assembly
② Guide protector
④ Rotor earth spring
Fig. A.
③ Stator assembly
Upper drum
Fig. B.

Fig. 36.

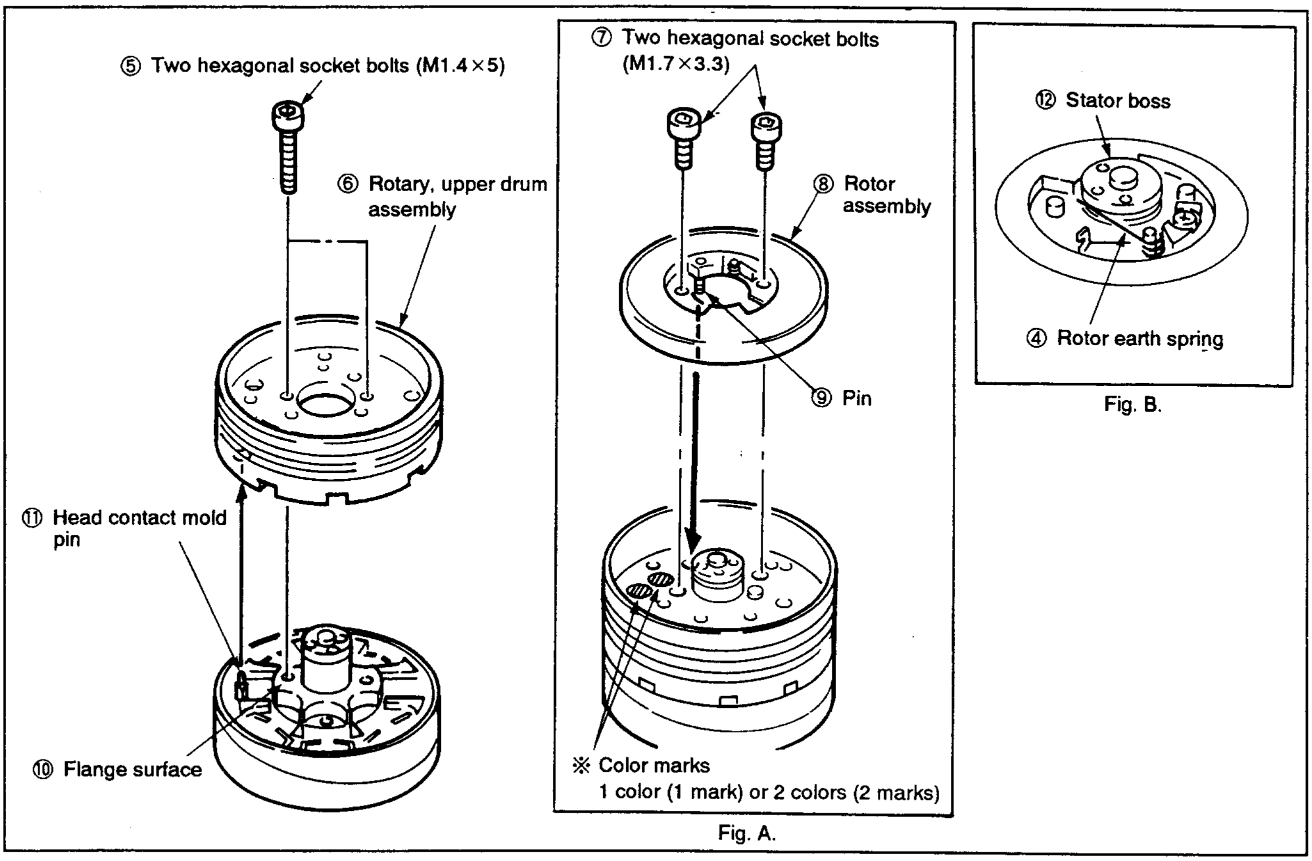

⑤ Two hexagonal socket bolts (M1.4×5)
⑥ Rotary, upper drum assembly
⑪ Head contact mold pin
⑩ Flange surface
⑦ Two hexagonal socket bolts (M1.7×3.3)
⑧ Rotor assembly
⑨ Pin
※ Color marks
1 color (1 mark) or 2 colors (2 marks)
Fig. A.
⑫ Stator boss
④ Rotor earth spring
Fig. B.

Fig. 37.

3-19. REEL TABLE HEIGHT CHECK (See Fig. 38.)

1. Removing

1) Refer to 1-1 and remove the cassette compartment holder assembly.
2) Refer to 3-1 and remove the retainer assembly.

2. Checking

1) Using a pair of slide calipers, etc., check that the distances from the LS chassis ① to the S reel table reel resting surface ② and to the T reel table reel resting surface ③ are both 3.9 ± 0.2 mm.

3. Attaching

1) Refer to 3-1 and attach the retainer assembly.
5) Refer to 1-1 and attach the cassette compartment holder assembly.

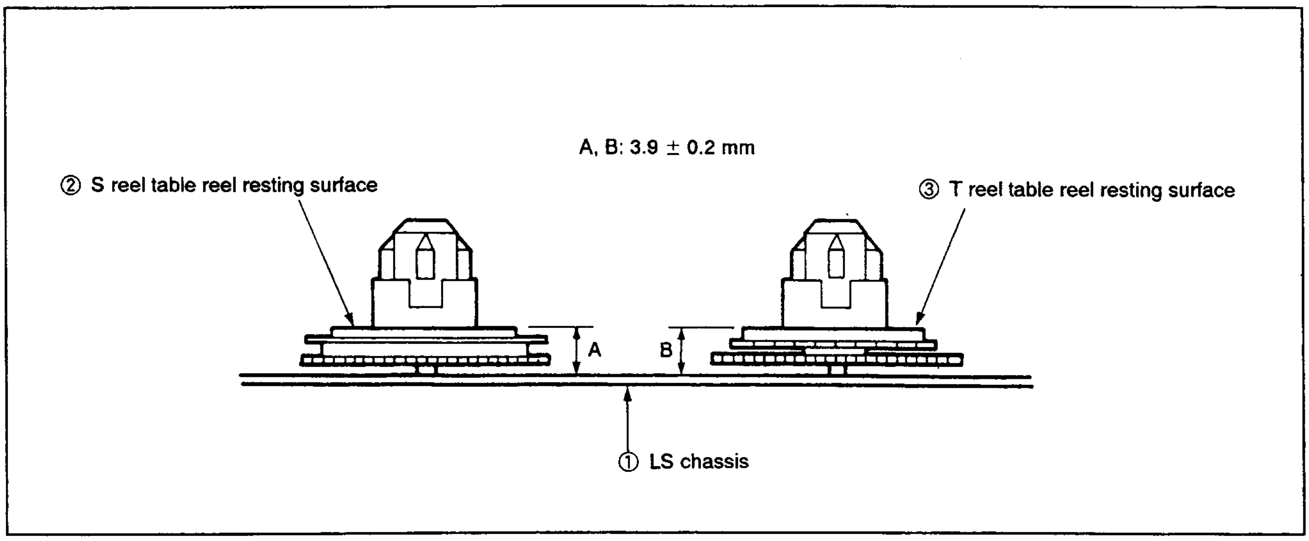

A, B: 3.9 ± 0.2 mm
② S reel table reel resting surface
③ T reel table reel resting surface
A
B
① LS chassis

Fig. 38.

3-20. FWD/RVS TORQUE CHECK

1) Set the FWD/RVS take-up torque cassette (Ref No. J-10.).
2) In the FWD mode, check that the torque value is 13 to 23 gf • cm for the T reel.
3) Turn ON the REC/REVIEW button and check that the torque value is 25 g • cm to 45 g • cm for the S reel.
4) If the above values are not met, replace the reel tables.

3-21. TENSION REGULATOR POSITION ADJUSTMENT (See Fig. 39.)

1. Removing

1) Refer to 1-1 and remove the cassette compartment holder assembly.
2) Refer to 3-1. and remove the ratiner assembly

2. Adjusting

1) Set the REC mode without a cassette tape.
2) Check that the distance between the internal face of the LS chassis and the TG-1 lower flange is 7.4 to 7.7 mm.
3) If the specification is not met, proceed onto step 4).
4) Loosen the screw ①.
5) If TG-1 ③ is inside the specified position, move the adjusting block ② slightly in the direction of arrow 🅐, if it is outside, move the adjusting block slightly in the direction of arrow 🅑, and secure the screw ①.

Note: Check that TG-1 can be moved in the C direction in REC mode. At this time, forward the cassette tape to the end.

3. Attaching

1) Refer to 3-1. and attach the ratiner assembly.
2) Refer to 1-1 and attach the cassette compartment holder assembly.

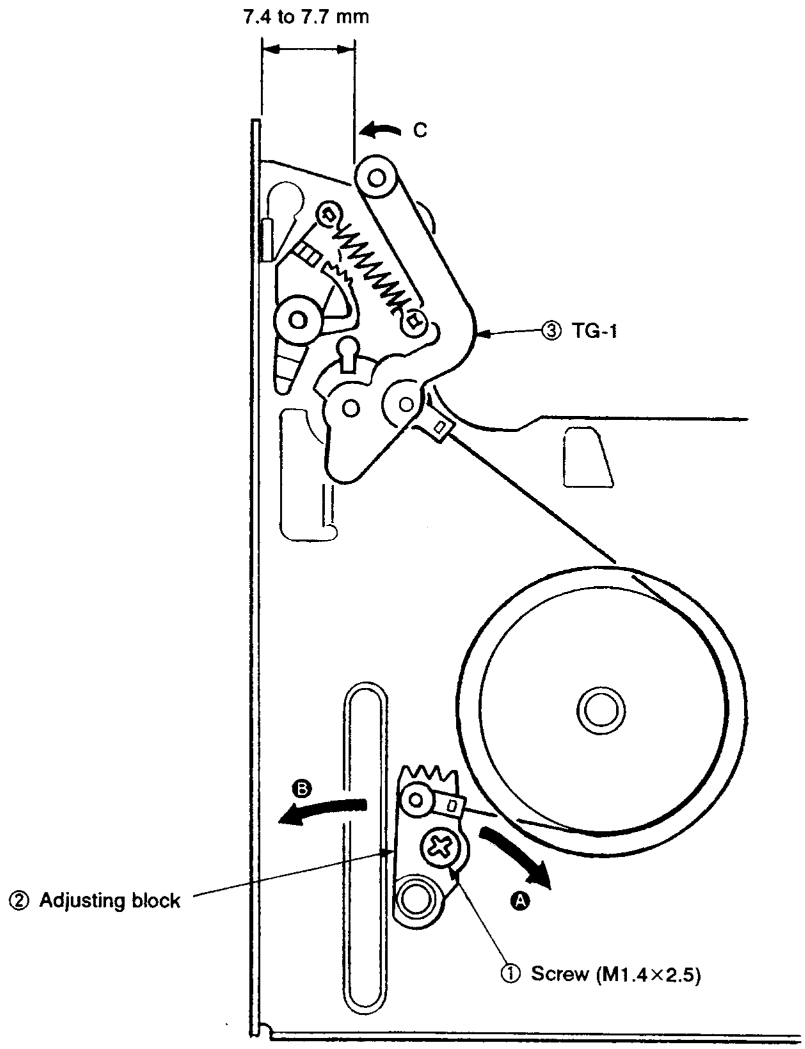


Fig. 39.

3-22. FWD BACK TENSION ADJUSTMENT (See Fig. 40.)

1. Adjusting

1) Set the torque cassette.
2) Set the REC mode and adjust the spring hook so that the reading for side S is 7 to 8.5 gf • cm.
3) If the reading is higher than the specification, while pressing the adjusting claw (ragged) of the TG-1 spring hook (1) ① in the direction of arrow Ⓐ, move the part where it engages with the claw of the TG-1 spring hook (2) ② in the direction of arrow Ⓒ.
4) If the reading is lower than the specification, while pressing part D of the TG-1 spring hook (1) ①, move the part where it engages with the claw of the TG-1 spring hook (2) ② in the direction of arrow Ⓑ.

Note: Remove the torque cassette once when moving the spring hook.

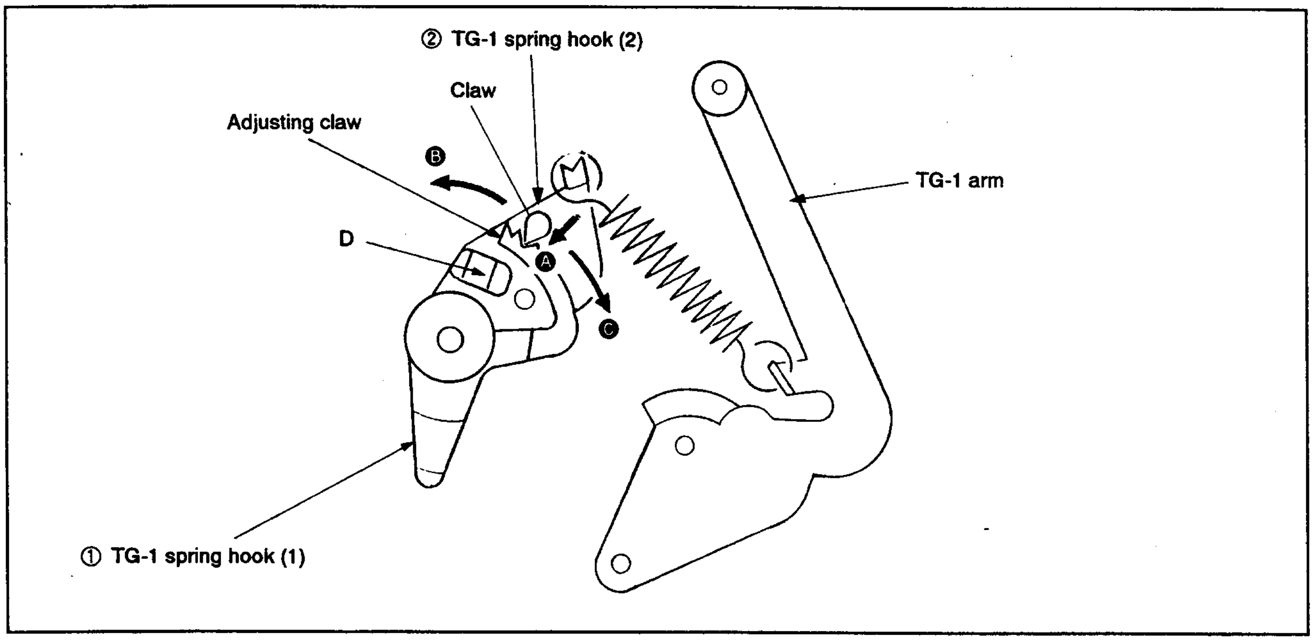


Fig. 40.

4. TAPE PATH ADJUSTMENT

The 8 mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.
This does away a tracking control knob and allows accurate track tracing.
On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.
Therefore, in the TK mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No. J-13). So, fine tracking adjustment can be easily done.
As the PATH mode setting varies with the model, and therfore, refer to the Service Manual.

4-1. PREPARATIONS FOR ADJUSTMENT.

1) Clean the tape running surfaces (tape guide, drum, capstan, shaft, pinch roller). (See Fig. 42.)
2) Connect the adjusting remote commander and set the PATH mode (track shift mode).
   (For CCD-SC5, set the data of page 1, address 00 to 01, release the protect, and set the data of page D, address 01 to 03.)
3) Connect the oscilloscope.
4) Playback a tracking alignment tape (WR5-1N/P).
5) Check that the RF waveform is flat at the entrance and exit of the oscilloscope. (See Ⓐ in Fig. 41.)
   If not flat, adjust according to the following procedure.
   When the RF Waveform is not Flat at the Entrance and Exit. (Refer to Ⓑ and Ⓒ in Fig. 41.)
6) After adjusting, return the data changed at 2) to its original value using the adjusting remote commander.
   (For CCD-SC5, return the data of page D, address 03 to 01, press the PAUSE button of the adjusting remote commander, and return the data of page 1, address 01 to 00.

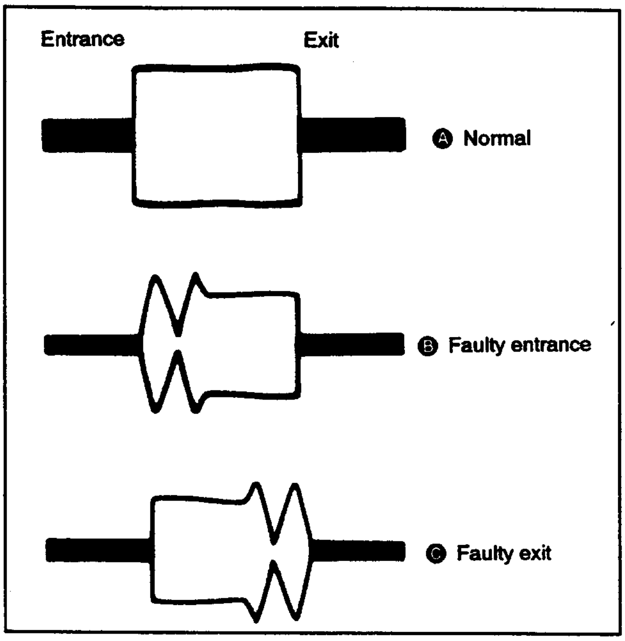


Fig. 41.

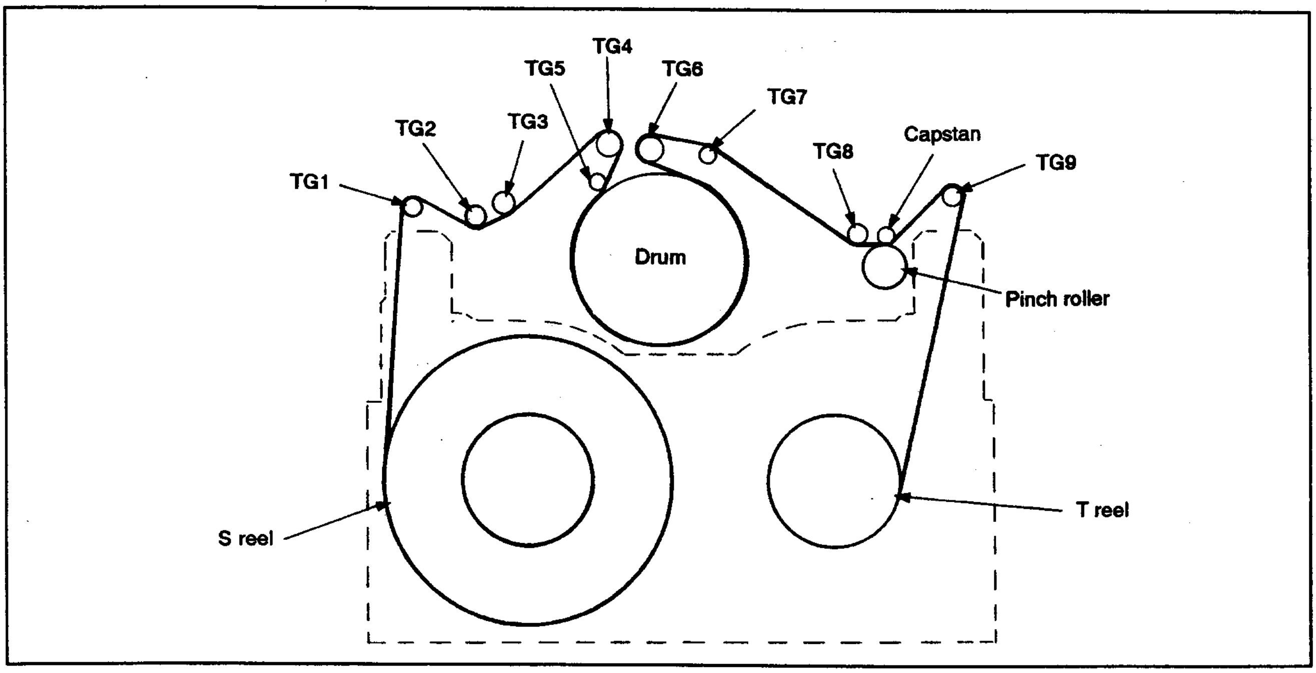


Fig. 42.

4-2. TRACKING ADJUSTMENT (See Fig. 43.)

1) Playback the tracking alignment tape.
2) Loosen the lock screw ① of the No. 4 guide (TG-4), rotate the No. 4 guide and flatten the waveform at the entrance.
3) Tighten the lock screw ① of the No. 4 guide (TG-4) and lock the No. 4 guide.
   At this time, check that the waveform does not change at the entrance.
4) Loosen the lock screw ② of the No. 6 guide (TG-6), rotate the No. 6 guide and flatten the waveform at the exit.
5) Tighten the lock screw ② of the No. 6 guide (TG-6) and lock the No. 6 guide.
   At this time, check that the waveform does not change at the exit

Note: Be careful not to loosen the lock screw too much because the guide will move easily.

The TG-4 and TG-6 gate adjusting screws need not be adjusted.

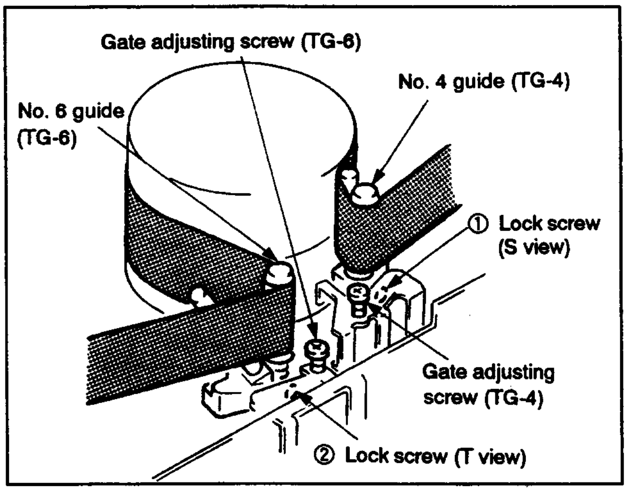


Fig. 43.

4-3. NO.3 GUIDE (TG-3) ADJUSTMENT

When replacing the entire guide base, its height is preset.

TG-3 Guide Height Preset (See Fig. 44.)

1) The preset height is when the distance between the top of the TG-3 base and the lower flange of TG-3 is 2.6 mm.

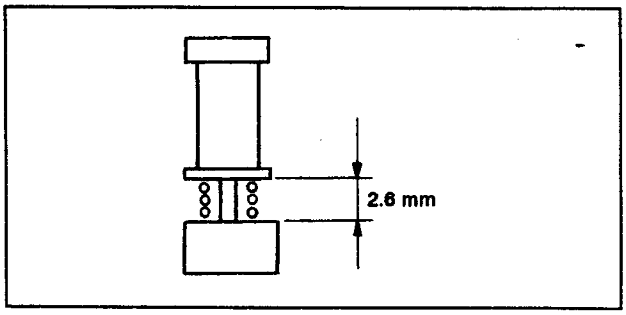


Fig. 44.

No. 3 Guide (TG-3) Adjustment

1) Playback the tracking alignment tape.
2) In the FWD mode, check that the tape runs along the lower flange of TG-3. If there is a clearance between the two, rotate TG-3 in the counterclockwise direction so that the tape runs along the lower flange of TG-3. Rotating angle must be within 180 °.
   Check that the tracking waveform (Fig. 45.) does not change during this procedure.
   If the tracking waveform at the entrance is turning downwards as shown in Fig. 46, raise the height of TG-3 and adjust the tracking at the entrance.

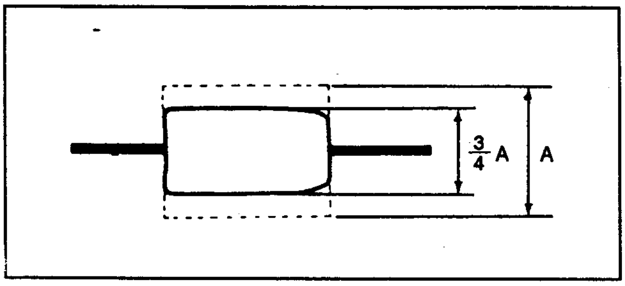


Fig. 45.

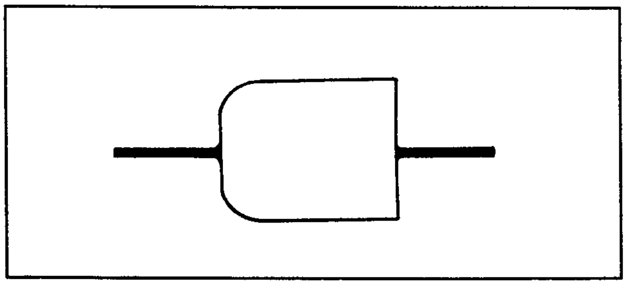


Fig. 46.

After adjusting the tracking at the entrance, set the REV mode. If the tape is curled at the lower flange of TG-3, rotate TG-3 in the clockwise direction to correct the curl.

4-4. NO. 9 GUIDE (TG-9) ADJUSTMENT

1) In the playback mode, check that the tape is not slack between the capstan and No.9 guide (TG-9).
   (Specification: 0.5 mm or less)
   If the tape is slack, rotate the No. 9 guide (TG-9) and adjust to correct the slack. (See Fig. 47.)
2) Set the REV mode and check the RF waveform at the exit. (See Fig. 48.)
3) If the waveform is unsatisfactory, rotate the TG-9 nut in the counterclockwise direction by 90 ° and recheck steps 2), and 3).
4) Apply screwlock to the top of No. 9 guide (TG-9).

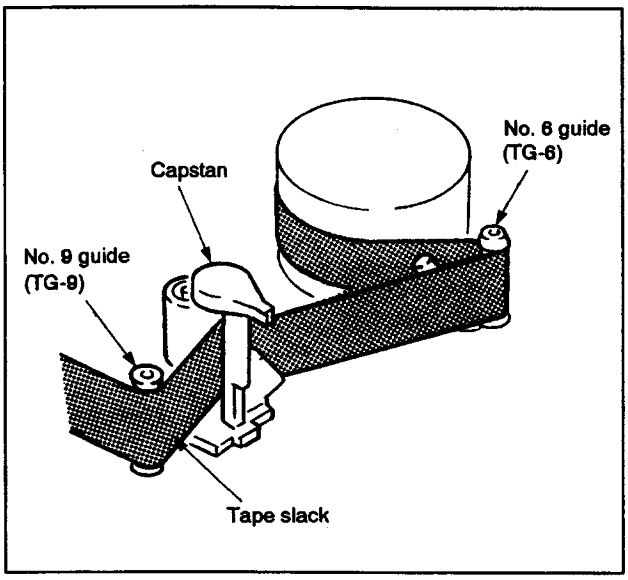


Fig. 47.

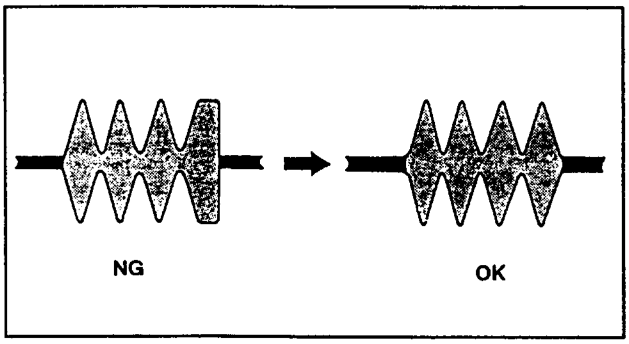


Fig. 48.

4-5. CHECKS AFTER ADJUSTMENTS

1. Tracking Check

1) Playback the tracking alignment tape. Set the PATH mode and shift the track. (See Fig. 49.)
2) Check that the minimum amplitude (EMIN) is 67% or more of the maximum amplitude. (See Fig. 50.)
3) Check that the waveform does not fluctuate badly. (See Fig. 51.)

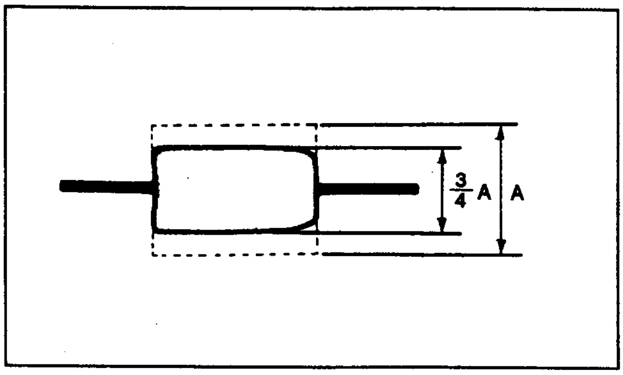
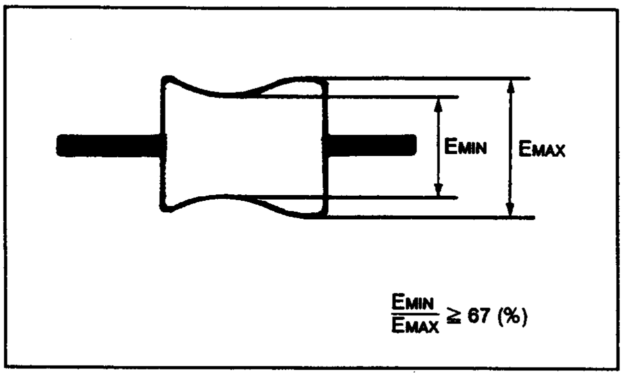
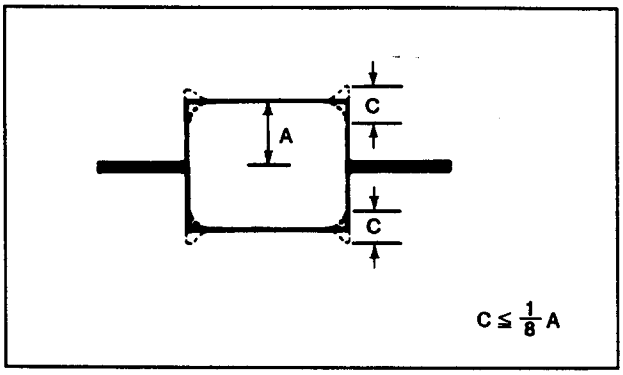


Fig. 49.



$$\frac{E_{MIN}}{E_{MAX}} \geq 67\ (\%)$$

Fig. 50.



$$C \leq \frac{1}{8}A$$

Fig. 51.

2. CUE, REV CHECKS

1) Playback the tracking alignment tape and set the REV mode.
   The peak pitches of the waveform at this time must be uniform. (See Ⓐ in Fig. 52.)
   If not uniform, carry out "4-2. TRACKING ADJUSTMENT" and "4-4. No. 9 GUIDE (TG-9) ADJUSTMENT.
2) Set the CUE mode. The peak pitches of the waveform at this time must be uniform. (See Ⓑ in Fig. 52.)
   If not uniform, carry out "4-2. TRACKING ADJUSTMENT".

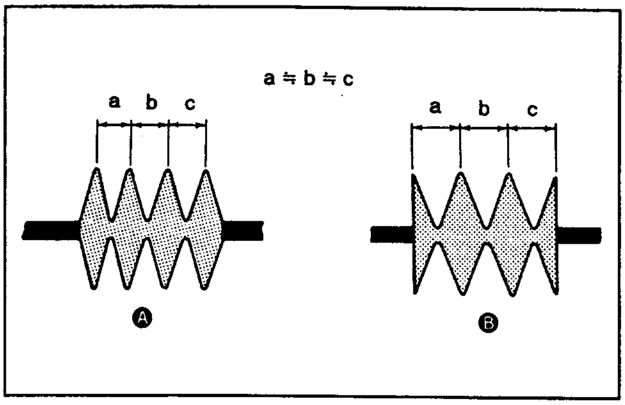


Fig. 52.

3. RISING CHECK

1) Playback the tracking alignment tape.
2) Set the PLAYBACK mode and check that the RF waveform rises horizontally within one second. Also check that the tape around the pinch roller is not slack. (See Fig. 53.)
3) Playback the tape after CUE/REV and FF/REW and check that the RF waveform rises horizontally within one second. Also check that the tape around the pinch roller is not slack.
4) Repeat the checks at steps 2) and 3).

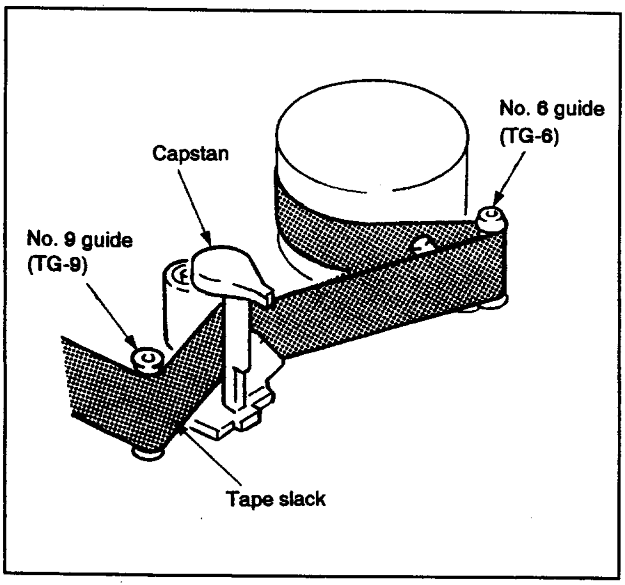

No. 6 guide
(TG-6)
Capstan
No. 9 guide
(TG-9)
Tape slack

Fig. 53.

4. TAPE PATH CHECK

In the CUE and REV modes, check that the tape is not curled badly at lower flange of TG-3, upper flange of TG-4, upper flange of TG-6, lower and upper flanges of TG-9 respectively. (See Fig. 54.)

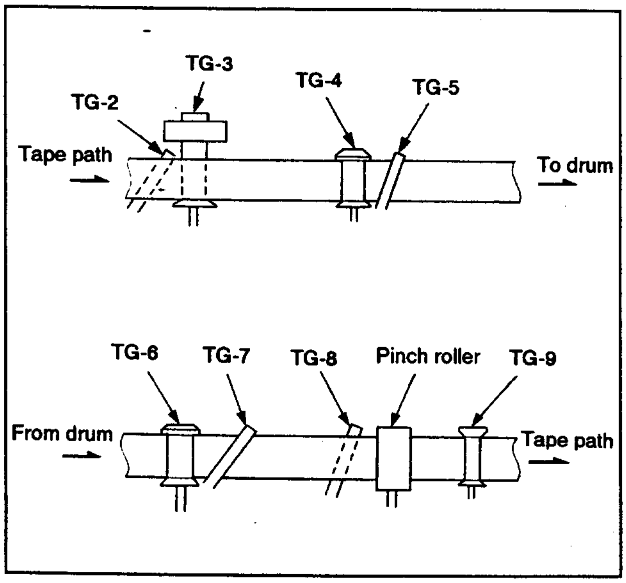
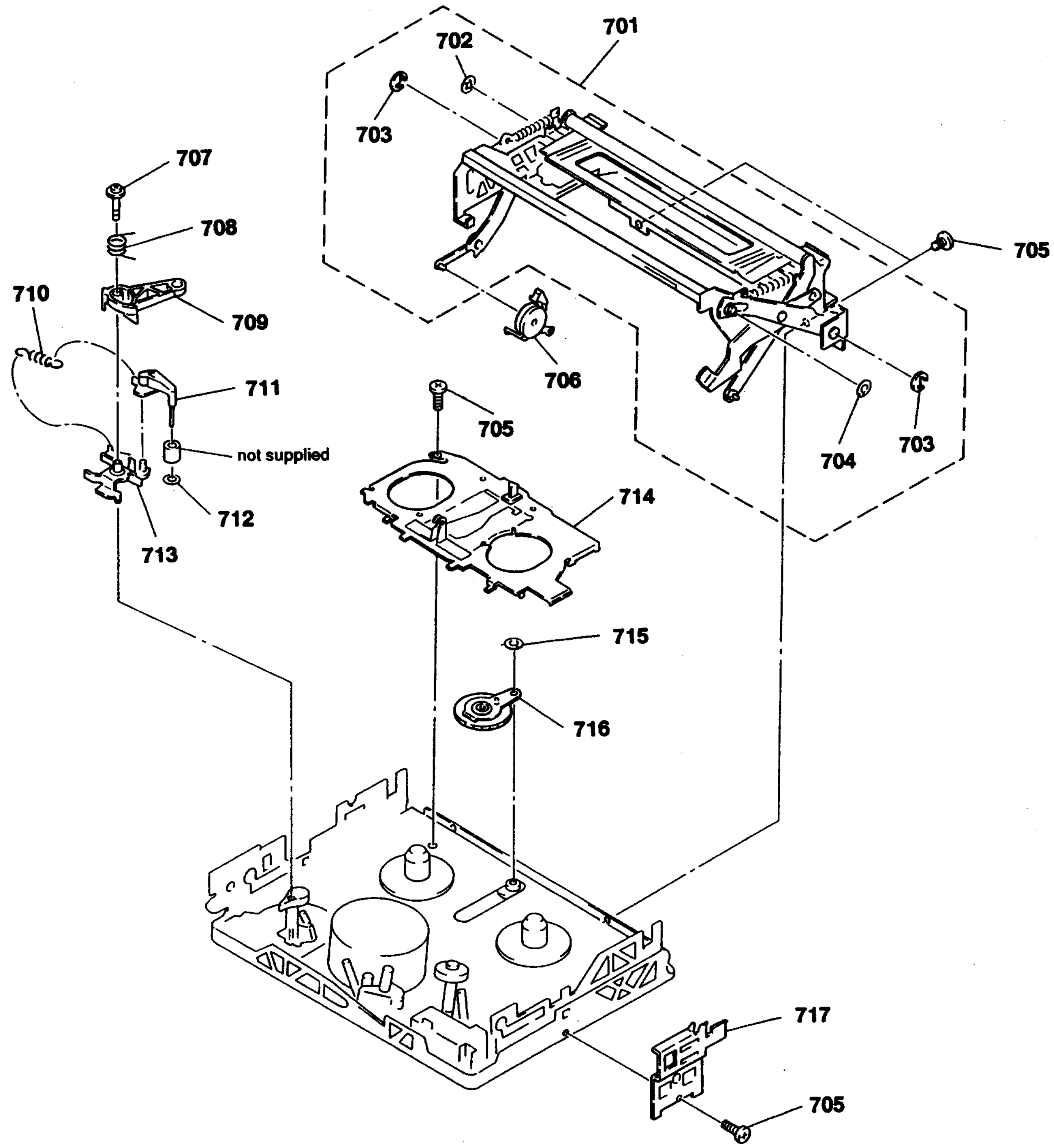

TG-3
TG-2
TG-4
TG-5
Tape path
To drum
TG-6
TG-7
TG-8
Pinch roller
TG-9
From drum
Tape path

Fig. 54.

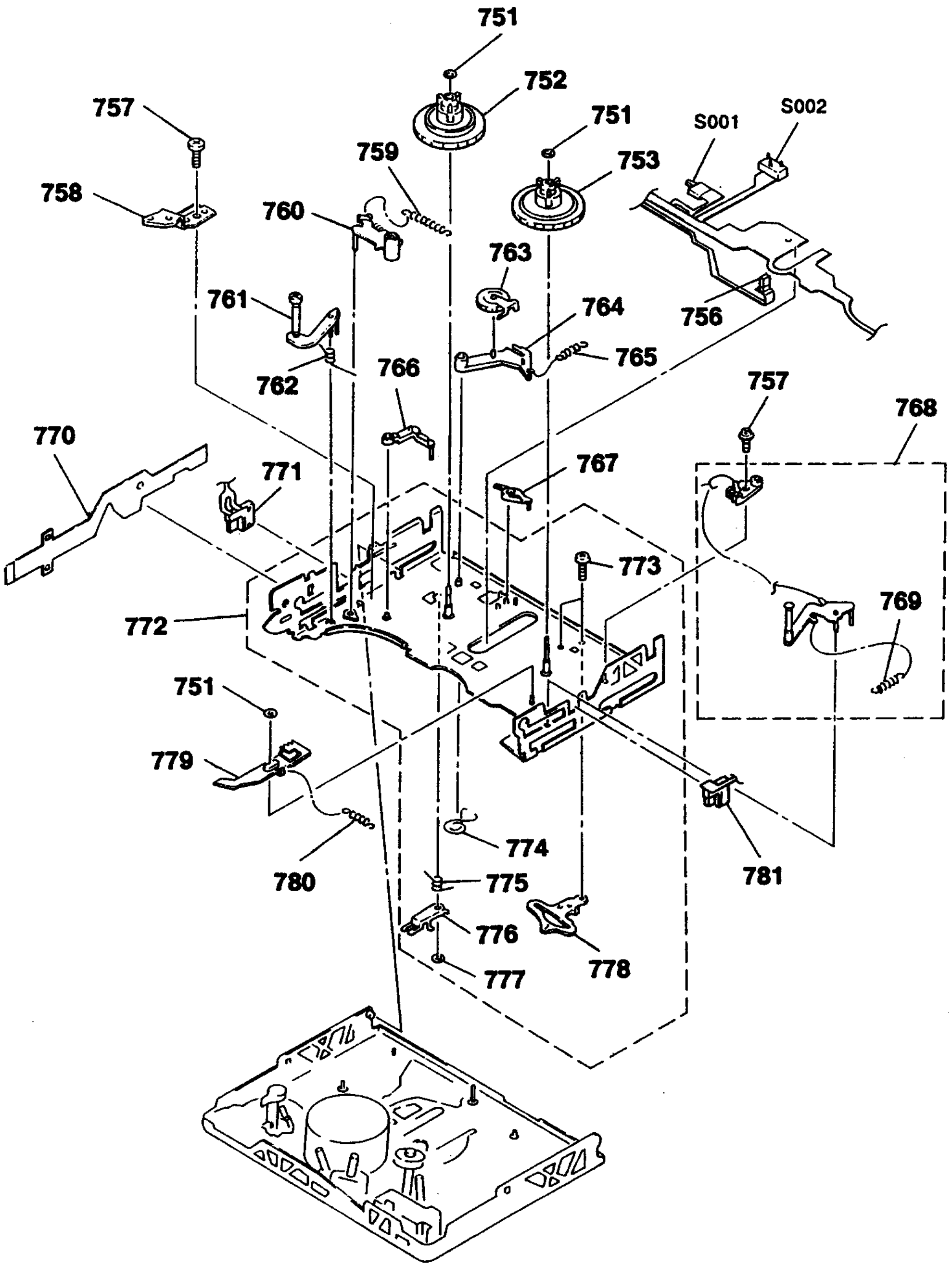
5. EXPLODED VIEWS

CASSETTE COMPARTMENT BLOCK ASSEMBLY


701
702
703
707
708
705
710
709
711
706
705
not supplied
704
703
714
712
713
715
716
717
705

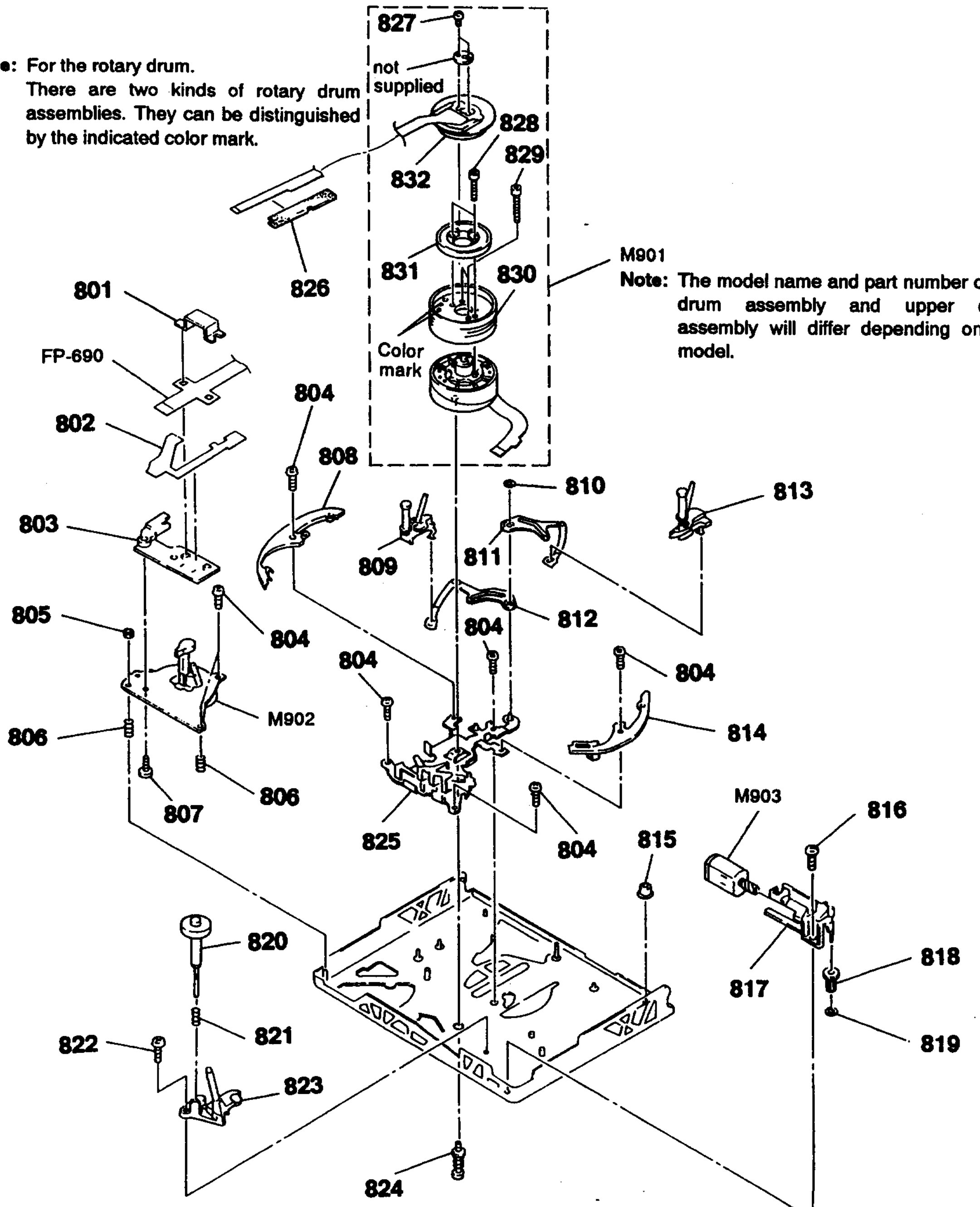
Ref. No.	Part No.	Description	Remark
701	A-7040-376-A	CASSETTE COMPARTMENT BLOCKASSY	
702	3-669-465-00	WASHER (1.5), STOPPER	
703	7-624-102-04	STOP RING 1.5, TYPE -E	
704	3-331-007-11	WASHER	
705	3-947-503-01	SCREW (M1.4X2.5)	
706	A-7040-377-A	DAMPER ASSY	
707	3-954-941-01	SCREW (M 1.4)	
708	3-954-939-01	SPRING, TORSION	
709	3-954-910-01	LEVER, HP	
710	3-954-940-01	SPRING, TENSION	
711	X-3943-156-1	ARM ASSY, HP	
712	3-315-414-31	WASHER	
713	3-955-824-01	PLATE, HP	
714	X-3943-143-1	RETAINER ASSY, GOOSENECK	
715	3-331-007-21	WASHER	
716	X-3943-142-1	GEAR ASSY, GOOSENECK	
* 717	3-954-745-01	RETAINER, CASSETTE COMPARTMENT	

LS CHASSIS BLOCK ASSEMBLY


751
752
751
753
757
758
759
760
S001
S002
763
761
764
756
765
762
766
757
768
770
771
767
773
769
772
751
779
774
780
775
781
776
778
777

Ref. No.	Part No.	Description	Remark
751	3-331-007-21	WASHER	
752	X-3943-132-1	TABLE ASSY, REEL, T	
753	X-3943-133-1	TABLE ASSY, REEL, S	
756	3-732-046-01	HOLDER, LED	
757	3-947-503-01	SCREW (M1.4X2.5)	
758	3-955-811-01	RETAINER, TG 9 ARM	
759	3-954-730-01	SPRING, TENSION	
760	X-3943-139-1	ARM ASSY, PINCH	
761	A-7040-368-A	ARM BLOCK ASSY, TG9	
762	3-954-729-01	SPRING, TORSION	
763	X-3943-131-1	GEAR ASSY, T SOFT	
764	3-954-853-01	ARM, T SOFT	
765	3-954-854-01	SPRING, TENSION	
766	3-954-850-01	RATCHET, T	
767	3-954-855-01	ARM, T SOFT RELEASE	
768	X-3943-134-1	ARM ASSY, TG1	
769	3-954-871-01	SPRING, TENSION	
770	1-649-039-11	FP-690 FLEXIBLE BOARD	
771	3-954-887-01	HOLDER (T), SENSOR	
772	A-7040-379-A	CHASSIS SUB BLOCK ASSY, LS	
773	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
774	3-954-804-01	SPRING, LIMITER	
775	3-954-806-01	SPRING, TORSION	
776	3-954-805-01	ARM, T RATCHET RELEASE	
777	3-954-807-01	WASHER	
778	3-954-809-01	PLATE, CAM, LS	
779	3-954-851-01	RATCHET, S	
780	3-954-852-01	SPRING, TENSION	
781	3-954-870-01	HOLDER (S), SENSOR	
S001	1-572-288-31	SWITCH, PUSH (C.C. LOCK)	
S002	1-692-614-11	SWITCH, PUSH (3 KEY)(REC PROOF, ME/MP)	

MECHANISM CHASSIS ASSEMBLY (1)

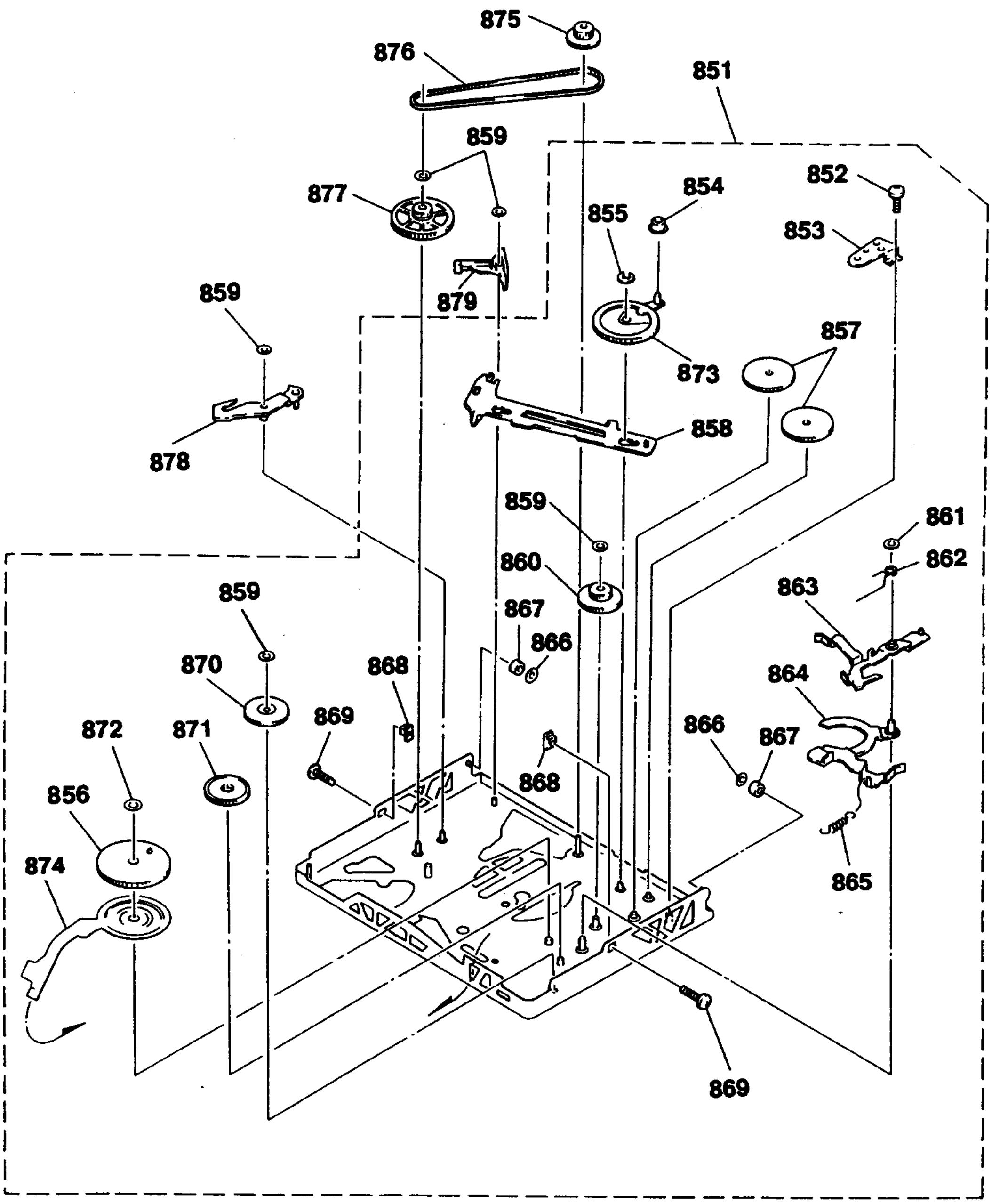

827
not supplied
828
829
832
826
831
830
Color mark
M901
801
FP-690
804
802
808
810
813
803
809
811
812
805
804
804
804
804
M902
814
806
806
807
825
804
815
M903
816
820
818
817
821
819
822
823
824

Note: For the rotary drum.
There are two kinds of rotary drum assemblies. They can be distinguished by the indicated color mark.

M901
Note: The model name and part number of the drum assembly and upper drum assembly will differ depending on the model.

Ref. No.	Part No.	Description	Remark
* 801	3-956-352-01	RETAINER, FLEXIBLE	
802	1-649-912-11	FP-94 FLEXIBLE BOARD	
* 803	3-956-057-01	BASE, HOLD	
804	3-947-503-01	SCREW (M1.4X2.5)	
805	3-940-892-01	NUT, HEXAGON	
806	3-954-907-01	SPRING, COMPRESSION	
807	2-626-645-01	SCREW (M1.7), WAVE	
808	3-954-899-01	RAIL, T	
809	A-7040-375-A	COASTER (T) BLOCK ASSY	
810	3-331-007-21	WASHER	
811	X-3943-149-1	ARM ASSY, S	
812	X-3943-150-1	ARM ASSY, T	
813	A-7040-374-A	COASTER (S) BLOCK ASSY	
814	3-954-898-01	RAIL, S	
815	3-954-739-01	ROLLER, LS GUIDE	
816	3-955-807-01	SCREW (M1.6 X 2)	
817	X-3943-128-1	HOLDER ASSY, MOTOR	
818	3-954-794-01	GEAR, WHEEL	
819	3-728-091-01	WASHER, STOPPER	
820	X-3943-146-1	ROLLER ASSY, TG3	
821	3-954-886-01	SPRING, COMPRESSION	
822	3-703-816-51	SCREW (M1.4X3.5), SPECIAL HEAD	
823	X-3943-145-1	BASE ASSY, TG3	
824	X-3943-151-1	SCREW ASSY, FITTING	
825	X-3943-147-1	BASE ASSY, DRUM	
* 826	3-957-374-01	CUSHION, DF	
827	3-728-108-41	SCREW (M1.4X2.7)	
828	3-727-807-01	BOLT (M1.7X3.3), HEXAGON SOCKET	
829	3-727-809-01	BOLT (M1.4X5), HEXAGON SOCKET	
830	See Note	DRUM, ASSY UPPER (Color mark: GREEN, GREEN/RED, BLACK, BLACK/RED)	
830	See Note	DRUM, ASSY UPPER (Color mark: RED, RED/RED, BLUE, BLUE/RED)	
831	A-7049-219-A	MOTOR BLOCK ASSY (ROTOR)	
832	A-7049-564-A	MOTOR BLOCK ASSY (STATOR)	
M901	See Note	DRUM ASSY	
M902	8-835-498-01	MOTOR, DC SCE-0401A (CAPSTAN)	
M903	X-3943-127-1	MOTOR ASSY, L (LOADING)	

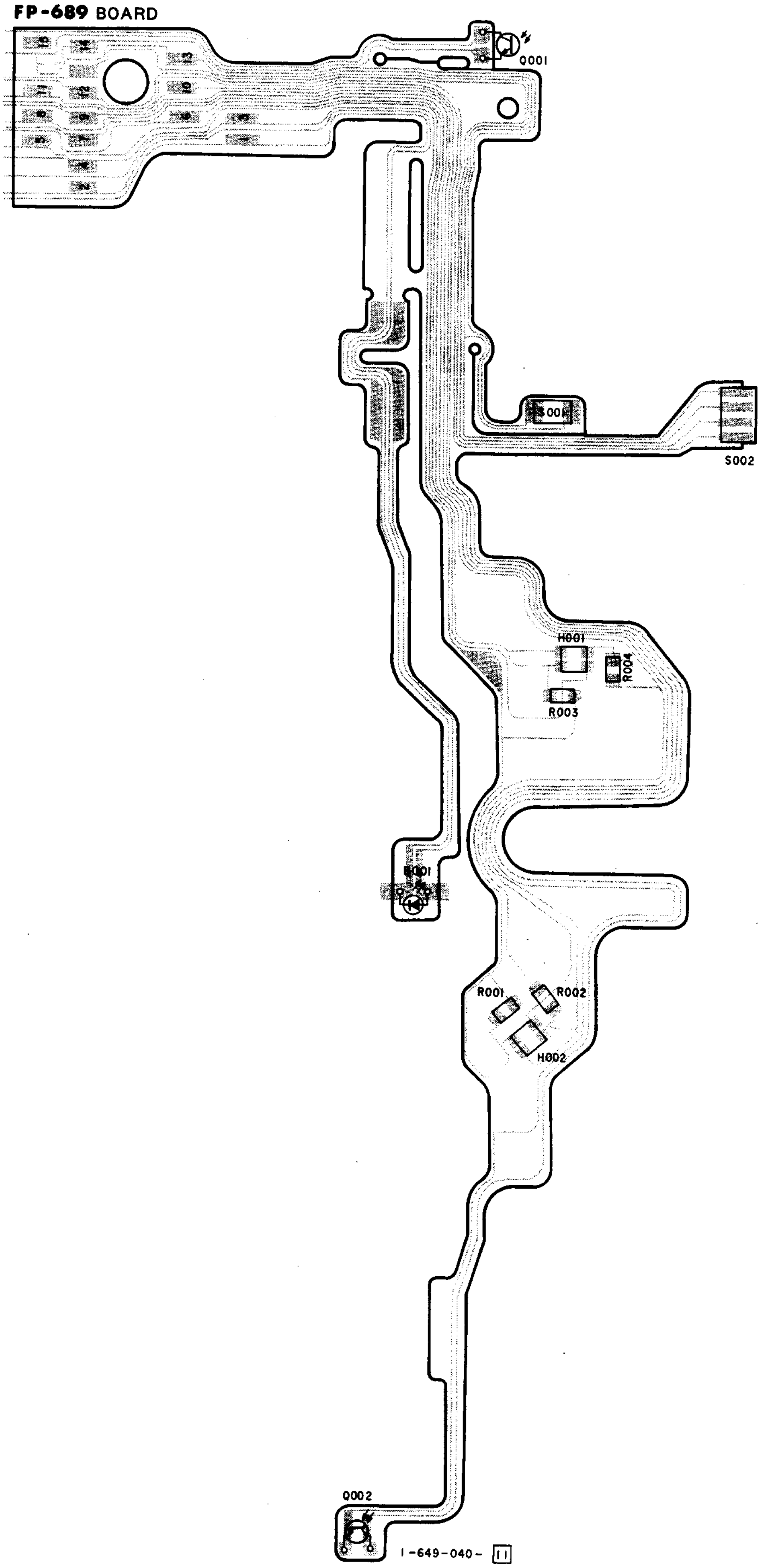
MECHANISM CHASSIS ASSEMBLY (2)

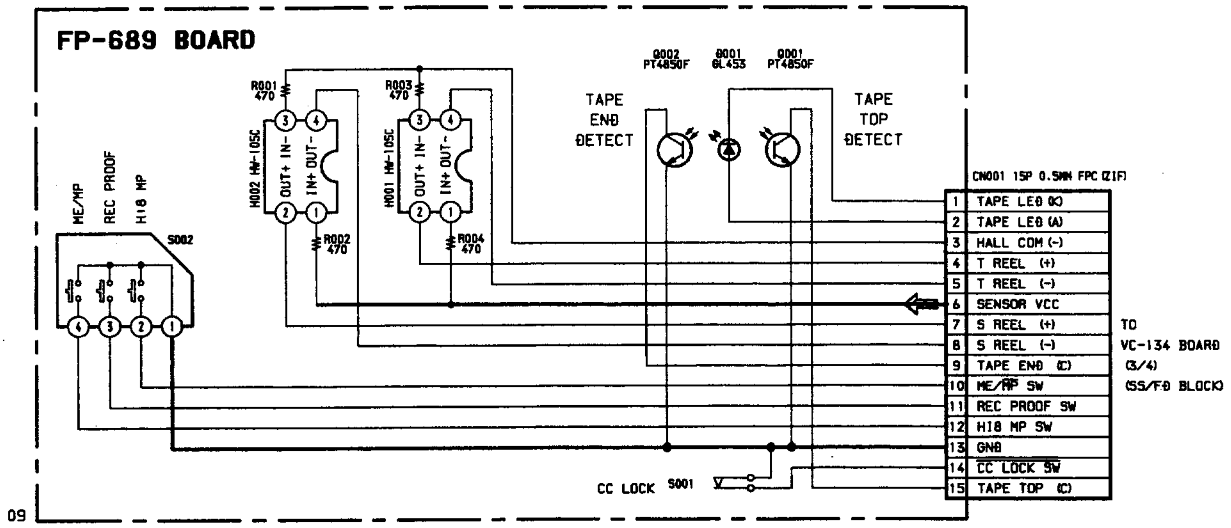

875
876
851
859
877
854
852
855
853
859
879
857
873
858
878
859
861
860
862
863
867
859
866
870
868
864
869
872
871
866
867
856
868
874
865
869

Ref. No.	Part No.	Description	Remark
851	A-7040-378-A	CHASSIS SUB BLOCK ASSY, MECH	
852	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
853	3-954-744-01	RETAINER, GEAR	
854	3-957-367-01	ROLLER, LS GUIDE (2)	
855	3-578-254-00	RING, RETAINING, E1.2	
856	X-3943-124-1	GEAR ASSY, MODE	
857	3-954-747-01	GEAR (D)	
858	3-954-748-01	SLIDER, M	
859	3-331-007-21	WASHER	
860	3-954-746-01	GEAR (C)	
861	3-955-804-01	WASHER	
862	3-954-791-01	SPRING, TORSION COIL	
863	X-3943-125-1	ARM ASSY, MODE	
864	X-3943-126-1	ARM (2) ASSY, MODE	
865	3-954-790-01	SPRING, TENSION	
866	3-331-007-11	WASHER	
867	3-954-742-01	ROLLER, LS	
868	3-954-743-01	BOSS, LS GUIDE	
869	3-947-503-01	SCREW (M1.4X2.5)	
870	3-954-749-01	GEAR (A)	
871	3-954-750-01	GEAR (B)	
872	3-579-788-01	WASHER, STOPPER	
873	3-954-752-01	GEAR, LS	
874	1-649-038-11	FP-685 FLEXIBLE BOARD	
875	3-954-788-01	PULLEY, RELAY	
876	3-954-789-01	BELT, RELAY	
877	X-3943-123-1	GEAR ASSY, CONVERSION	
878	X-3943-336-1	ARM ASSY, PINCH RELEASE	
879	3-954-741-01	ARM, EJ	

6. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

FP-689 BOARD


Q001
S001
S002
H001
R004
R003
D001
R001
R002
H002
Q002
1-649-040- 11


FP-689 BOARD
R001 470
R002 470
R003 470
R004 470
H002 HW-105C
H001 HW-105C
OUT+ IN- IN+ OUT-
Q002 PT4850F
D001 GL453
Q001 PT4850F
TAPE END DETECT
TAPE TOP DETECT
ME/MP
REC PROOF
HI8 MP
S002
CC LOCK S001
CN001 15P 0.5MM FPC (ZIF)
1 TAPE LED (K)
2 TAPE LED (A)
3 HALL COM (-)
4 T REEL (+)
5 T REEL (-)
6 SENSOR VCC
7 S REEL (+)
8 S REEL (-)
9 TAPE END (C)
10 ME/MP SW
11 REC PROOF SW
12 HI8 MP SW
13 GND
14 CC LOCK SW
15 TAPE TOP (C)
TO VC-134 BOARD (3/4) (SS/FD BLOCK)
09

7. ELECTRICAL PARTS LIST

Ref.No.	Part No.	Description			Remark
		FP-689 BOARD, COMPLETE ************************ (Ref. No. 9,000 Series)			
	3-732-046-01	HOLDER, LED			
	3-954-870-01	HOLDER (S), SENSOR			
	3-954-887-01	HOLDER (T), SENSOR			
		< DIODE >			
D001	8-719-988-42	DIODE GL453S			
		< HALL ELEMENT >			
H001	8-719-033-37	ELEMENT, HALL HW-105C			
H002	8-719-033-37	ELEMENT, HALL HW-105C			
		< TRANSISTOR >			
Q001	8-729-907-25	TRANSISTOR PT4850F			
Q002	8-729-907-25	TRANSISTOR PT4850F			
		< RESISTOR >			
R001	1-216-817-11	METAL CHIP 470	5%	1/16W	
R002	1-216-817-11	METAL CHIP 470	5%	1/16W	
R003	1-216-817-11	METAL CHIP 470	5%	1/16W	
R004	1-216-817-11	METAL CHIP 470	5%	1/16W	

Ref.No.	Part No.	Description	Remark
		< SWITCH >	
S001	1-572-288-31	SWITCH, PUSH	
S002	1-692-614-11	SWITCH, PUSH (3 KEY)	